

Amateur Radio

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- ▶ Mysteries of sporadic E propagation
- ▶ Introduction to amateur satellites

WRC-12: Dale VK1DSH reports



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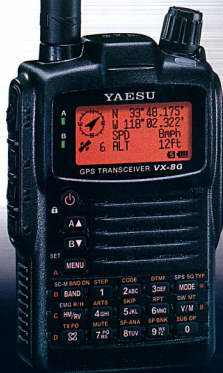


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Amateur Radio

The Journal of the Wireless Institute of Australia

Volume 80
Number 4
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This month's cover

A plenary meeting of WRC-12 in session.
Some 2000 delegates attend each plenary
session. Read the report from Dale Hughes
VK1DSH commencing on page 8 about this
important international conference and the
impacts of the decisions on the amateur
service. Photo courtesy of the ITU.

Contributions to Amateur Radio



Amateur Radio is a forum for
WIA members' amateur radio
experiences, opinions,
and news. Manuscripts
with drawings and/or photos are
welcome and will be considered
for publication. Articles attached to
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The opinions expressed in this publication do not necessarily reflect
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Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editorial

Peter Freeman VK3PF

An annual collection of AR?

Many readers may be aware that the ARRL has available for sale "2011 Periodicals on CD-ROM" which includes electronic copies of that year's issues of their magazines: QST, QEX and NCJ (National Contest Journal). They also have available collations of most other years dating back to 1996. The latest of these CD-ROMs sells at \$24.95 plus postage. Similarly, the RSGB also have an annual collation of RadCom available on CD-ROM, which sells at £19.99 plus postage. The RSGB also have a number of multi-year collections available for sale.

Of course, the WIA has available the "AR Magazine 1933 - 1939 on CD", by WIA and Will McGhie VK6UU, selling at \$20.00 plus postage.

Over recent years I have received enquiries about if AR could be made available in electronic format, and have discussed this in previous Editorials. I will not discuss that topic again in this piece.

One thing that we can consider is the preparation of an annual collection of AR, starting with all of the issues published in 2011. This should be a relatively easy task given the current contractual arrangements with our publishing house. In fact, at its recent meeting, the Publications Committee discussed this topic and requested Sergio Fontana to prepare an estimate of the cost of preparing such a collection.

We can undertake the task, but will it be worthwhile? Is there demand for such a product from you our readers? If you are interested in buying such a collection, what do you consider to be a fair price? The Publications Committee is interested in what you think, so please email the National Office with your views: nationaloffice@wia.org.au

Field Days

This Editorial was being prepared shortly before the John Moyle Field Day. In Victoria, the weather was looking to be potentially damp, if not wet, at the start of the weekend and probably clearing up. I trust that all that ventured into the field did not have a trying time with weather.

In the middle of this month we have the WIA National Field Day. Not really a contest in my eyes, rather it is aimed at encouraging groups, especially clubs, to set up stations in prominent public locations and promoting our hobby to the wider public. It will be important that appropriate OHS precautions are taken when setting up such stations. Is your club participating? Do not forget to appoint someone to record the events and to prepare a report – it might be published in a later edition of AR.

Call for articles

Our stock of articles is slowly declining. We have a stock for about six months or so, assuming that the regular column and club contributions continue as normal.

I encourage you to consider writing an article and submitting it for publication. It could be on any topic related to our hobby. Our stock of technical articles is definitely in need of bolstering – write up that latest construction project.

You can find some guidelines on the AR magazine pages on the WIA website – look for the link "Contributing material".

Continued on page 5



WIA comment

Michael Owen VK3KI

That's what we do

In this month's issue we publish an article by Dale Hughes VK1DSH.

In this month's issue we also publish a letter from David Sumner K1ZZ Chief Executive Officer of the ARRL.

In his article Dale writes about WRC-12, the work leading up to WRC-12, addresses the importance of the regional telecommunications organisation, identifies the matters that affect us as amateurs and puts a WRC in context, and explains why it is important for every amateur.

As we have said so often, it all starts there in Geneva.

Dale was a member of the Australian delegation to WRC-12 nominated and paid for by the Wireless Institute of Australia. Within the terms of the Australian brief, he was representing the amateur service.

Dale started on his journey of representing the Australian amateur in this area in late 2009 when the late Keith Malcolm VK1KM suggested he become involved. Prior to that Dale was best known for his technical articles published in this magazine on a pretty regular basis since November 2000.

Keith had represented the amateur service on the WIA delegations to the WRC since 2003, and had made a significant contribution to amateur radio in many other ways.

But, of course, life was a little simpler in 2003. The Region 3 regional telecommunications organisation, the Asia-Pacific Telecommunity, the APT, was not as effective as it is now. Today, the Regional Telecommunication organisations are an essential step to a WRC.

That is why Dale attended two of the APT's preparatory meetings for

WRC-12, one in Hong Kong and one in Busan, South Korea.

Dale also attended an ITU Study Group meeting in Geneva in November 2010, one of the meetings that provide a technical basis for the agenda items to be resolved at the WRC.

Through all of this Dale was able to learn how it all works and to meet the other people involved in this incredible process, including the amateur representatives from other countries, and those representing the IARU, the International Amateur Radio Union. The IARU is only an observer at a WRC, which is a meeting of the sovereign states that form the membership of the ITU, but is a Sector Member and so may participate directly in the Study Groups.

Not only that, he was able to present the studies undertaken here in Australia, and to provide technical evidence supporting the amateur case.

That the amateur service was adequately represented at all of the many steps that culminate in a WRC and at the WRC, does not depend on one person or indeed one national society.

It depends on a number of the world's national amateur societies and their federation, the IARU, and the people of knowledge and experience and with special skills who they can call upon to undertake this vital work.

But the process does not stop with the conclusion of a WRC. Each WRC proposes the agenda for future WRCs and immediately one WRC ends the preparatory meetings for the next WRC commence.

As Dale points out, the Agenda for the next WRC in 2015 or 2016

includes items of particular interest to the amateur services, and in particular the proposal originating from Cuba for a small secondary allocation to the amateur service in the range 5250 to 5450 kHz.

I know it sounds very glamorous to participate in these conferences, and in truth it can be really fascinating. But it can be very far from fun. In 2003 the Plenary meetings during the last week started at 9 am and ran through to 3 am next morning, only to start again at 9 am.

May I share with you that is not fun.

But I headed this comment "That is what we do".

By that, I meant that for me that role of representing the Australian amateurs in the national preparation for a WRC, the regional preparation for a WRC, the technical preparation for a WRC and the actual WRC is the most important of all the functions that we undertake.

When I attended the recent Wyong hamfest I met an amateur who wished to become a member of the WIA because that was necessary if he was to become a Learning Facilitator or Assessor, as he believed that attracting, training and qualifying new amateurs was critical for our future. He had not become a member in the past, because he did not find the magazine interesting or the other facilities particularly relevant for his interests.

We then discussed the very matters I write about in this Comment, the representational and advocacy roles of the WIA.

Continued on page 5

New WIA Awards Manager announced

Following discussion at its February meeting, the WIA Board has appointed Stephen Chamberlain VK6IR as the WIA Awards Manager.

Chris Platt VK5CP remains the WIA Director responsible for Awards.

VK4SN new RD Contest Manager

The WIA Board meeting in Melbourne over the weekend of 18/19 February 2012 appointed Alan Shannon VK4SN the new Contest Manager for the WIA Remembrance Day Contest, following the retirement of Peter Harding VK4OD. He will be supported in this role by the Lockyer Valley Radio & Electronics Club Inc.

The Board, in appointing Alan, acknowledged and thanked the other amateurs who had indicated that they would be interested in the position.

The Board also appointed Trent Sampson VK4TI as the WIA Director responsible for Contests.

New RD Manager proposes major changes to the Contest

The new Manager of the Remembrance Day Contest is Alan Shannon VK4SN, and a consistent competitor in most contests and brings with him a new way of looking at the RD Contest.

With every change comes housekeeping and Alan has moved forward at a rapid pace with changes to the operating conditions in the RD. These have been put forward to the Contesting Committee and are on the WIA website for final comment prior to publication in *AR*. Go to Members Area, then Contests and under the Remembrance Day Contest you will find the new rules for comment.

One of the big changes that Alan has proposed is the introduction of a Single Transmitter Multi operator class and the introduction of a combined teams section.

Please send your feedback to Alan at his WIA email address: vk4sn@wia.org.au

WIA releases additional higher power trial information

The WIA has released additional information in relation to the High Power Trials.

The additional information includes the WIA's recommended log information, the additional calculated data to include a power of 500 watts mean in the guide "Human Exposure to EMR: Assessment of Amateur Radio Stations for Compliance with ACA Requirements" as well as some general advice and a downloadable ACMA form for an application.

The information is currently available on the WIA web site. Go to "Your Amateur Radio Licence" then "Australian Amateur Licensing and Callsigns", and then "High Power Trial" can be found under the "Operating Guidelines".

It is hoped that anyone considering applying for a variation of their licence to allow the higher power will find this information helpful.

WIA Board Meets

The WIA Board met at the Bayswater, Victoria offices over the weekend 18 and 19 February 2012.

Because the Board only meets face to face two or three times a year, one of which is at the Annual General Meeting, there is a great deal of work to do, and very many matters were discussed, and some just not reached.

WIA Treasurer John Longayroux and Secretary Sarah Thomson were also present and WIA Manager Mal Brooks kept the minutes.

Some of the issues that were addressed by the Board included the appointment of a new RD Contest Manager, to replace Peter Harding VK4OD. Alan Shannon VK4SN, who will be supported by the Lockyer Valley Radio & Electronics Club, was appointed RD Contest Manager, and others who had expressed a willingness to help, were thanked for their interest.

The Board made it clear that while it expected that there would be some rule changes for the 2012 contest, and it expected these changes to be placed on the WIA web site to allow comment, it hoped that there would not be further changes for some years.

Trent Sampson VK4TI is now the Director responsible for contests.

Concern was expressed at the number of members not renewing, and the number of non-members participating in some clubs was also highlighted. The Board agreed to attempt better communication with the clubs, continuing to provide the services it could to help them and at the same time seeking their support in attracting and retaining members.

The Board consulted with Peter Mill, the Beacon and Repeater Coordinator, and understood some of the difficulties he faced. It was agreed to use a new method of tracking beacon and repeater applications, so the office, once it was implemented, would be able to know the precise stage each application was at, and advise the applicants accordingly.

Considerable time was devoted to reviewing WIA Awards. A number of changes are contemplated and the Director responsible for Awards Chris Platt will be reporting on that directly, after he has consulted with the Awards Committee.

The Board agreed with the general approach of the ACMA to the higher power trials.

The WIA website will provide additional information.

A design for a travelling badge based on the design suggested by Murray de Plater VK1MDP was chosen, and production will now be investigated.

Time was spent discussing the Commonwealth's proposed uniform health and work safety laws, as yet to be adopted by many of the states. These laws require a duty of care to volunteers and create offences for not discharging that duty.

Among the many other matters discussed and decided were a budget for the current year, the implications of result of the WRC-12, including agenda for the next WRC, the on-going discussion with the ACMA on a number of matters, including the inspection of stations and the possession of transmitters by amateur licensees, the magazine, the Mildura Annual Conference, a new award for the first person to make a contact on two metres between Africa and Australia presented by Eric Jamieson VK5LP.

The Board will continue to exchange ideas and reach conclusions by email, with its next face to face meeting in Mildura, after the Annual Conference.

Proposals for 2013 WIA Annual Conference

At its February meeting, the Board of the WIA considered the venue for the 2013 Annual Conference weekend.

It had before it two submissions, one complete and another under development.

The Board has deferred its decision in this matter until the end of March and encourages any club (or group of clubs) considering applying to do so by close of business Friday March 30th.

Full details of what should be included in any application can be found by referring to the President's Comment in the July 2011 edition of "Amateur Radio".

The Eric Jamieson Indian Ocean Awards Announced

The WIA Board, meeting in Melbourne over the weekend of 18/19 February 2012 accepted the offer of Eric Jamieson VK5LP to sponsor awards for the first amateur radio contacts on the two metre band spanning the Indian Ocean between Australia and Africa.

There will be three awards, for voice, CW and digital modes and will be known as the Eric Jamieson Indian Ocean Awards.

In presenting a sum of money to the Wireless Institute of Australia Foundation to fund the Awards, Eric said "I acknowledge that spanning the Indian Ocean will not be easy but one cannot say that it will never be accomplished. The degree of difficulty may be judged from the so far inability to span the much shorter Atlantic Ocean despite concerted attempts in order to win the Brendan Atlantic Ocean trophies."

The very simple Rules for the Award provide that contacts made by EME, or with the assistance of meteor scatter, satellites, aircraft enhancement or the like will not be eligible.

The WIA Board acknowledged the generosity of Eric in making this Award available, and expressed the hope that it will encourage amateurs to attempt a truly difficult challenge.



Editorial

Continued from page 2

As always, have the camera ready – we are always looking for well composed high resolution photographs that might suit the front cover.

Annual Conference

Time is running out for people to register for the Annual Conference, being held 25 to 27 May in Mildura. Make sure that you do not leave it too late. If possible, please use the

on-line registration form at the WIA web site – it will make the job much easier for the office team.

In addition to the Annual General Meeting and Open Forum, the weekend is shaping up to be an excellent mix of social and technical activities. Personally, I am very interested to hear about the equipment used in the Project Horus high altitude balloon experiments,

having followed some of the past launches from afar via the web. It will also be interesting to hear the latest on the chirp radar system. I hope to make the event and look forward to making contact with many of you then.

Cheers,

Peter VK3PF



WIA comment

Continued from page 3

He agreed that this, in itself, was a reason for joining the WIA.

I am proud of the fact that the WIA is one of those national societies that can contribute in this way.

We need proper representation. That is what we do.

It is because of what we do that we can and do ask that every amateur and potential amateur becomes a member of the WIA and contributes to the cost of what we do.

And the agenda for the next WRC means we too must start preparing now.

But we are particularly lucky that we have people like Dale Hughes to represent us so well.

In this issue we publish a letter from Dave Sumner of the ARRL, one of the most experienced WRC participants for the IARU who I know.

I cannot resist quoting one paragraph from his letter.

"I wish all of your members could have had the experience of watching Dale Hughes in action on their behalf at the World Radiocommunication Conference earlier this year. Dale is just the latest in the long string of capable representatives that WIA has sent to Geneva over a span of many decades."



Silent Key

Wally Green VK6WG

The world lost a leading pioneering radio amateur on 7 March 2012.

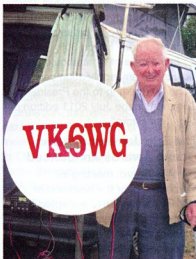
Wally Green was born at King River near Albany on 11 August 1911. He left school at the age of 14 years and worked in a variety of trades such as automotive mechanics and electrical finally joining the WA Public Works Department in 1949. Between 1963 and 1967 he was stationed in Derby, moving to Norseman in 1968 and returning to Albany in 1972. He retired in 1976.

Wally was licensed in 1936. He was a proficient CW operator, competent at speeds up to 25 wpm. His initial operations were on 7 and 14 MHz but he had a desire to work at higher and higher frequencies. In 1948, he heard a contact between two VK5 amateurs on 50 MHz using a 6 metre converter fed into a 7 MHz receiver. The signals were so good that his daughter Vi (in her biography of her Dad) reported that Wally thought these were 7 MHz signal breakthrough. A few days later he heard that the signals were 50 MHz ones. Wally had his first 6 metre contact on 15 November 1948 with VK5GB. Also on that day he worked Reg Galle VK5QR – a man who would provide him with contacts on higher bands ultimately culminating 40 years later with contacts on 3456 MHz!

Wally built his own home in Albany. After clearing the block, he began felling timber for the stumps and after trying with a pit saw, found and used a diesel engine to power the saw. He also cut the floor boards for the garage that ultimately provided space for his shack and other timber for the house. He and his wife Grace did the framing, cladding, roofing and interior fit-out. The house was completed in the early 50s.

Of course amateur radio was not neglected in this period and Vi tells of tuning the 6 metre band during summer months to see if they could hear signals. If so, the cry "the band is open" was enough to get Wally back into the shack and Vi and her sister Elaine sometimes receiving a "spotter's fee" of 2 shillings!

Wally's pioneering work on VHF, UHF and microwaves was



Wally VK6WG out helping to check the performance of the Mt Barker 10 GHz beacon in 2008. Photo by VK6KZ.

described in some detail in the article on pages 8 and 9 of the August 2011 issue of *Amateur Radio*. It is worth reminding younger radio amateurs that Wally was largely a self-educated radio man exploring and constructing equipment without any of more recent test equipment and availability of components. Lecher lines to measure frequencies; torch globes and diodes to detect transmitter output.



Wally Green VK6WG arriving at his 100th birthday celebration in a celebration in a 1911 Darracq car. Photo by VK6KZ.

Components were hard to source – especially in a country town like Albany (remember that frequencies above 1 GHz were not in common use in those times). Wally made waveguide from ordinary copper pipe; bent metal and fabricated his parabolic dishes; electroplated cavities and other items to reduce losses.

Living about 2000 km from Adelaide, it was a remarkable feat that he and the late Reg Galle VK5QR were able to find the right frequencies at 1296, 2304 and 3456 MHz and were dedicated enough to spend the hours searching for one another's signals over unproven distances! Reg reckoned that they could have made it on 5760 MHz as well if Wally had not been so enthusiastically making apricot jam from fruit from his garden (Reg was an English teacher, so like Wally lacked a formal engineering background!).

After the death of his wife Grace in 1985, Wally continued to live alone in his home until his death. He was supported by his son Brian VK6YAU and wife Carol and his daughters Elaine in Albany and Vi in the Gold Coast. He continued to operate his station VK6WG giving great delight to many in the east. His last contacts were less than a month ago at age 100 years 6 months!

We will all miss him!!

Wally Howse VK6KZ



WIA proposes operating principles

WIA Board

Although the WIA has a Corporate Ethics Policy that is intended to apply to everyone representing the WIA, it has been suggested that the WIA lacks any operating principles which could be used as a guide for the conduct of the hobby of amateur radio.

The Board of the WIA considered the suggestion at its last meeting in Melbourne and it was agreed that the adoption of appropriate operating principles, a new Australian Amateur's Code, could be helpful.

It was suggested that a model could be something similar to the Amateur's Code, written in the early days of amateur radio by Paul Segal W9EEA in 1928, and several of the WIA Directors spent time preparing a first draft set out below.

It was also decided to consult with all amateurs and with all clubs and to invite comment and suggestions. The Board recognises that not only can the language be improved but other or

different concepts could be incorporated in such principles. However, the Board is keen to keep such Operating Principles brief and general in nature, so they have the best chance of remaining relevant well into the future.

All clubs and all individual amateurs are invited to send their comments and suggestions to the WIA Manager Mal Brooks who will collate and distribute them to the Board.

Please either post your contribution to the WIA at PO Box 2042, Bayswater, VIC, 3153 or send it by email to nationaloffice@wia.org.au by 1 May 2012.

Operating Principles

The Board of the Wireless Institute of Australia has adopted the following Operating Principles as a guide for all amateurs:

We, the Australian Radio Amateurs will at all times:

- act and operate with integrity;
- be honest in our dealings;

- ensure that the operating equipment of our station is safe for ourselves and for visitors to our station;
- show respect to and extend courtesy to fellow amateurs and other spectrum users;
- be aware of and comply with our licence conditions and the other laws and regulations that govern the installation and operation of our station;
- encourage others to participate in amateur radio;
- strive to improve our technical and operating skills;
- assist our community in emergencies;
- ensure that any spectrum interference issues resulting from the operation of our station are resolved promptly and with courtesy, and
- promote the benefits of amateur radio to the community.



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The ITU, World Radio Conferences and you...

Dale Hughes VK1DSH



Photo 1: A plenary meeting in session. Some 2000 delegates attend each plenary session. Photo courtesy of the ITU.

Background and history

You may have read or heard about World Radio Conferences, or what were previously called World Administrative Radio Conferences. This year, the 2012 World Radio Conference (WRC12) was held between January 23 and February 17 in Geneva, Switzerland. The conference was organised and run by the International Telecommunications Union (ITU) and was a vast and complex affair. Approximately 3500 delegates from 165 ITU member states and sector members attended WRC12. The conference budget was in excess of \$5 million Australian dollars, many thousands of input documents were considered and approximately 10,000 pages of text was translated

into six different languages for the 'final acts' of the conference. The range of frequencies covered by the input contributions was from about 8 kHz to 3,000 GHz and virtually every application of radio technology and its use was discussed.

During WRC12, Australia's interests were presented and defended by members of the Australian delegation. The approximately 30 delegates represented all areas of the Australian radio user community, for example, ACMA (the lead agency), Defence, AMSA, Airservices Australia, Telstra, CSIRO, BOM, broadcasters, satellite users and operators, private industry, WIA, and others. All delegates had to abide by a code of conduct which outlined our duties and obligations,

and each delegate was approved by the Government before departure. My role was to look after the issues of interest to Australian amateur operators and my expenses were covered by the WIA. The delegations of other countries were similarly organised.

As an amateur you might ask: what are these conferences and how do they work? Does a WRC affect what you do in your shack? This article attempts to answer those questions as well as describe the process and the final conference outcome for the amateur service, but first we need to have a look at the history of the ITU, where it fits into world affairs and its mission. The ITU website (www.itu.int) explains:

ITU was **founded in Paris in 1865** as the International Telegraph Union. It took its present name in 1934, and in **1947 became a specialized agency of the United Nations**. Although its first area of expertise was the telegraph, the work of ITU now covers the whole ICT (**information and communication technologies**) sector, from digital broadcasting to the Internet, and from mobile technologies to 3D TV. An organization of public-private partnership since its inception, ITU currently has a **membership of 193 countries and some 700 private-sector entities**. ITU is headquartered in Geneva...

The ITU mission is also clearly defined:

The ITU Radiocommunication Sector (ITU-R) plays a vital role in the global management of the radio-frequency spectrum and satellite orbits - limited natural resources which are increasingly in demand from a large and growing number of services such as fixed, mobile, broadcasting, amateur, space research, emergency telecommunications, meteorology, global positioning systems, environmental monitoring and communication services - that ensure safety of life on land, at sea and in the skies.

Our mission is to ensure the rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services, including those using satellite orbits, and to carry out studies and approve Recommendations on radiocommunication matters.

The focus of this article is on the radio communication aspects of the work of the ITU; for amateur radio operators, the above paragraphs are the crux of the matter. All radio spectrum and its use is governed by Radio Regulations that are developed and/or modified at WRC conferences. The ITU, through its Radio Bureau, publishes and helps

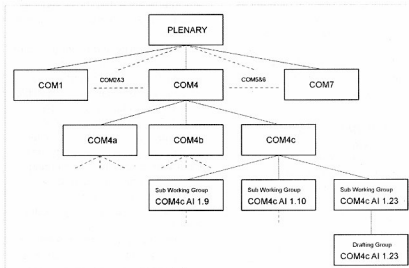


Figure 1: WRC12 committee structure. Not all sub-working groups formed drafting groups, but all sub-working groups produced output documents for their higher level committees.

enforce application of the Radio Regulations through the spectrum management agencies of each country (the ACMA in Australia). Hence, every time you use any radio communications service, for example, make a call on your mobile telephone, watch TV, operate your amateur transceiver and the like you are relying on the work of the ITU.

More to the point, the amateur and amateur satellite service is defined in article 1 of the ITU Radio Regulations:

1.56 amateur service: A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

1.57 amateur-satellite service: A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.

The above definitions of the amateur service are the bases of our continued access to the radio frequency spectrum and make amateur operators legitimate stakeholders in the discussions about frequency use and allocations.

All radio services, whether 'primary' or 'secondary' have one or more entries in the ITU Table of Frequency Allocations. The allocation table is maintained and modified through actions of the ITU and WRCs, so it is very important to be listed as a radio service.

There is a process that has to be followed for any radio service to change an entry in the Frequency Allocation Table and the ITU website provides some information about this:

World Radiocommunication Conferences (WRC) are held every three to four years. It is the job of WRC to review, and, if necessary, revise the Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and the geostationary-satellite and non-geostationary-satellite orbits. Revisions are made on the basis of an agenda determined by the ITU Council, which takes into account recommendations made by previous world radiocommunication conferences.

As you might expect, the process is complicated because of:

- The complexity of radio communications technology and its rapid pace of change.

- Cultural and political differences between countries.
- Security, defence and public safety issues.
- The huge number of services and users, many of which are incompatible.
- Etc...

Leading up to WRC12

The best way to explain what happens in the years preceding a WRC is by following an example. For this I will use the issue that was the focus of activity for the amateur service at WRC12. The WRC12 Agenda Item (AI) was:

'1.23 to consider an allocation of about 15 kHz in parts of the band 415-526.5 kHz to the amateur service on a secondary basis, taking into account the need to protect existing services.'

For any issue to be discussed at a WRC, it has to be agreed beforehand by the preceding WRC, or even the one prior to that. At WRC12 there were discussions about agenda items for WRC15 and WRC18. So the WRC12 agenda item above was agreed to by the WRC07 meeting. Making the list of agenda items for future WRCs provides a mandate for the ITU to form study groups and working parties to fully explore the technical issues. This is especially critical for allowing new services into the spectrum space of other users. A general principal for all studies and negotiations is that the existing or incumbent service has priority and that new users *'...shall not cause harmful interference to, and shall not claim protection from...'* the incumbent service. This is summed up by the phrase *'...taking into account the need to protect existing services.'* Note however, that this may not be true if the new service is a 'primary' service.

In the case of AI 1.23, this means that the amateur service must not cause interference to the aeronautical radio navigation service or the maritime mobile service who are the existing primary and secondary users of the band 415 to 526.5 kHz, nor can the amateur service complain about

any interference that those services might cause to amateur operation in that band.

Compatibility and sharing studies undertaken by working parties generally produce a report about whether the services are compatible and whether sharing is possible or not. The working party for AI 1.23 was chaired by Dr Ken Pulfer VE3PU and the working party took input from delegates representing various national administrations and interested ITU members (International Maritime Organisation, International Civil Aviation Organisation, International Amateur Radio Union etc.) Input documents were presented by many delegates and extensively discussed.

Input documents for ITU study groups and working parties are created by national study groups that mirror the ITU process. In Australia there are regular meetings of the Australian Radio Study Groups and WRC Preparatory Group. The WIA is one stake holder in these meetings as are many other Australian users of the radio frequency spectrum. The WIA presents the views and needs of the Australian amateur operator community to the Australian administration and other spectrum users. The other parties also present their views and needs, all of these views are discussed in the ARSG meetings and the final result becomes part of the national position that is presented to the ITU.

Over the last four and a half years, there have been seven, two week long, ITU working party meetings at which AI 1.23 was discussed and the end result of this process was the publication of three ITU documents prior to WRC12 (1):

- **REPORT ITU-R M.2200**
Characteristics of amateur radio stations in the range 415-526.5 kHz for sharing studies
- **REPORT ITU-R M.22031**
Compatibility of amateur service stations with existing services in the range 415-526.5 kHz
- **REPORT ITU-R M.2226**
Description of amateur and experimental operation between 415 and 526.5 kHz in some countries

These documents provide all the information necessary to formulate protection measures for incumbent services in the band in question and they showed that sharing the band between incumbent services and stations of the amateur service was possible under some circumstances, if the appropriate protection measures were applied. The measures in this case were frequency and geographic spacing based on transmitted power.

REPORT ITU-R M.2226 contains the results of experimental activities in support of AI 1.23 and the WIA provided a significant amount of support through the provision of a 'third party licence' that allowed a number of interested Australian amateurs to establish stations to operate between 505 and 515 kHz. This work resulted in a formal report that was presented to the ACMA and subsequently became part of Australia's contribution to the last APT and ITU working party meetings in late 2011. The value of the report was that it showed that amateurs could actually do something useful with an MF allocation and that we could co-exist with other users of the band. A large part of the Australian report is now found in **REPORT ITU-R M.2226**.

Getting a regional perspective

To further complicate matters, there is also a regional perspective to consider. Just as the radio world is divided up into administrative regions (1, 2 and 3), there are regional blocs of nations that are members of the ITU and who take part in the WRC process. Australia belongs to a group known as the Asia-Pacific Telecommunity (see www.apf.int) and this group promotes the ICT interests of the Asia-Pacific region. Through regular meetings the APT tries to develop a consensus position on WRC agenda items and it is a powerful tool during WRC meetings if a region has a common view on a particular topic. The agenda item coordinator can speak for many nations and this can help speed up the WRC process. In the event that a global decision cannot be reached

on a particular agenda item, there may be a regional solution that can be achieved through regional consensus and this can be presented at the WRC if appropriate. During WRC12 I was the APT coordinator for AI 1.23 and this allowed me to speak during meetings so that I could present both the Asia-Pacific position as well as the Australian view point.

There are various regional groups: CITEL for the Americas, the RCC for the Russian Federation, CEPT for Western Europe, ATU for Africa and the ASMG for the Arab Middle Eastern countries.

WRC process

As there are many issues to discuss at a WRC, each agenda item is allocated to particular WRC committee that cover issues with some similarity. The committee structure is hierarchical as shown in Figure 1. Agenda Item 1.23 was allocated to Committee 4 (COM4) as were a number of maritime issues. COM4 was further broken up into a number of smaller groups. The other higher level committees dealt with issues such as satellite coordination, aeronautical issues, international mobile telephony, broadcasting, meeting procedures and budgeting, and so on.

The sub-working group and drafting group (where formed) meetings were the site of intense technical and national interest discussion. The Chairman of the sub-working group responsible for AI 1.23 was Brennan Price N4QX. I chaired the two meetings of the AI 1.23 drafting group. The meetings attempted to forge a consensus position that all people were happy with, or sometimes a position that everyone was equally unhappy with... Many meetings were held on most agenda items and in the case of AI 1.23 there were two meetings of the drafting group and 12 meetings of the sub-working group. While the ideal outcome of each sub-working group was a consensus position, it was not always achieved. For AI 1.23 the output document contained both the consensus

position of administrations that wanted an amateur allocation, and the 'No Change' (NOC) position of administrations that did not want a new amateur allocation. The issue went from the sub-working group to COM4C to COM4 where the NOC position was debated and finally defeated. In general, the result of ITU meetings is determined by consensus as voting is almost unheard of.

At this stage, the proposal existed in the six official languages of the ITU and it then passed to the plenary meeting for a first and second reading of the document. After two attempts at a first reading and confirmation at the second reading the proposal was passed by the plenary session. The new amateur allocation became part of the ITU Radio Regulations and part of an international treaty which was signed by 153 member countries during the closing ceremony. The new Radio Regulations that were formulated at WRC12 will come into force on 1 January 2013 and changes to national rules and regulations will occur sometime after that. Noting however, that a national allocation is not automatic and an administration may decide not to authorise operation in any particular band.

For the amateur service, the final outcome is a new global secondary allocation covering the band of frequencies between 472 and 479 kHz, with a power limit of 1 W e.i.r.p, or 5 W e.i.r.p for countries more than 800 km from the border of countries listed in footnote 5.A123 of the Radio Regulations. Footnote 5.B123 allows countries who do not want the new amateur allocation to 'opt out' and this is similar to the current provisions for the 135.7 to 137.8 kHz amateur allocation.

Possible future agenda items for WRC15

A number of items of interest/concern to amateurs are listed as agenda items for the next WRC in 2015 or 2016:

- A proposal which originated from Cuba was for a small secondary

allocation for the amateur service in the frequency range 5250 to 5450 kHz. The basis of this proposal is the disaster relief activities undertaken by amateurs in many parts of the world. The favourable propagation characteristics of the 5 MHz band are likely to allow propagation when both the adjacent bands of 3.5 MHz and 7 MHz are not available due to ionospheric or noise factors. This makes the bands very suitable for reliable medium range communications in many parts of the world.

- A number of issues which might affect use of the amateur bands at 10 GHz and 78 GHz.
- The ever present search for additional bandwidth for both mobile telephony and wireless broadband access and applications. One estimate of the required additional bandwidth is 500 MHz at somewhere below 4 GHz. This amount of spectrum will be difficult to find...

These agenda items will be the subject of studies in the appropriate working parties to be held over the next few years and the results of the studies will be used to inform the discussions during the next WRC.

Conclusion

There were two questions posed at the beginning of this article and I will answer them in reverse order:

Does a WRC affect what you do in your shack? Yes, access to our amateur bands is through decisions made at World Radio Conferences which formulate the Radio Regulations that govern what we do, how we do it and what frequency bands we have available. National regulations are derived directly from the ITU Radio Regulations.

What are these conferences and how do they work? Hopefully this article has provided an insight into the WRC process. It is worth noting that the amateur service is well represented at each WRC by the various national amateur radio societies and the International Amateur Radio Union. While the process is lengthy, it appears to

work reasonably well and ensures equitable access to the radio frequency spectrum and general compatibility between the various radio services.

The new MF allocation to the amateur service was a good outcome and represents a compromise position that meets the fundamental needs of all the users of that part of the radio spectrum.

Acknowledgements

I would like to thank the following organisations and people:

- The WIA for the opportunity to represent Australia at WRC12 and ITU study group 5A meetings. It was a challenging and interesting experience.
- The Australian Communications and Media Authority for their organisation of the Australian WRC12 delegation and the preceding study and preparatory group meetings.
- The IARU and other national amateur radio societies for their continued support of the amateur service at the international level.

- The ITU for the excellent facilities and services provided during the WRC and study group meetings.
- The other Australian and foreign delegates for their support and fellowship during the WRC and associated meetings.

Reference

1. These documents can be downloaded from the ITU website: <http://www.itu.int/pub/R-REP-M/en>



Over to you

March Editorial

Editor:

I read the March 2012 *Amateur Radio* editorial with a mixture of pride and dismay – pride that *ARRL* membership is recognized as good value, but dismay that WIA's performance in this regard might be seen as suffering by comparison.

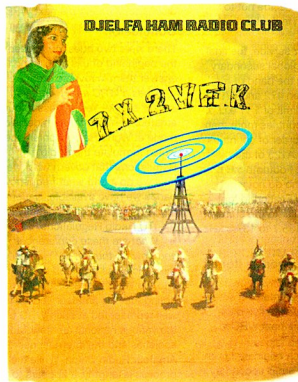
The resources and economies of scale that are available to an association with 158,000 members simply are not accessible to an organization the size of the WIA. Viewed from afar, the quality and quantity of work done by and through WIA on behalf of the radio amateurs of Australia is quite incredible, all the more so when one considers how much is performed by volunteers.

I wish all of your members could have had the experience of watching Dale Hughes in action on their behalf at the World Radiocommunication Conference earlier this year. Dale is just the latest in the long string of capable representatives that WIA has sent to Geneva over a span of many decades.

WIA has begun its second century in fine style. *ARRL* can only hope to do as well when our turn comes, two years from now.

Sincere 73,

David Sumner, K1ZZ
Chief Executive Officer
ARRL



Under the patronage of
Minister of Youth and Sports of Algeria
to mark the 50th Anniversary of Independence of Algeria
and the 20th anniversary of the birth of Djelfa radio club 7X2VER
the direction of the Youth and Sports of Djelfa
organizes the 4th International Ham Meeting
from 20 to 26 May 2012
For support we provide
transportation from airport to Djelfa, and Djelfa to airport,
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Email: bodil17000@yahoo.fr,
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Hospitality is our motto;
we aim friendship and brotherhood among radio amateurs
in the world and exchange experiences of technology transfer.



I am happy to once more be back on the air. For some time it has been difficult to take part in the ALARA net on Monday evenings and I had put the problem down to antenna difficulties thinking our neighbourhood possums may have damaged some wiring. However, two guardian angels from the local club came to the rescue and removed my tuner and replacing it with another and the results were instantaneous. Wonderful!

The autumn season is well and truly with us. Many clubs will have already commenced organizing their White Elephant offerings by now and hopefully there will be ALARA members making their presence felt on these occasions, either by organizing an event, manning an ALARA information table or even being one of the stall holders. It is important to participate and demonstrate that women club members are also enthusiastic about their hobby.

Last month the WARO 50th Birthday was celebrated in Rotorua, New Zealand. ALARA was well represented by a number of members and their OMs who travelled there for the occasion. As a coincidence this 50 year celebration was held on the actual date of the original meeting and at the same venue. Celia ZL1ALK was a special participant. She was present at the first, foundation meeting of WARO and has been a stalwart supporter of all its activities, throughout the following years. Further details of the celebrations will be published in the next edition.



Photo 1: The completed radio built by Carmel VK2CAR.

In the March edition of *AR* magazine was an article for an 80 metre QRP transceiver built by Carmel VK2CAR. Unfortunately there were no photos of her project printed in time to accompany the article so here we take the opportunity to demonstrate her completed work.

News from VK4

State representative Lyn VK4SWE and her OM Tex decided to tour the Whitsundays on board MV Trim. While they had paper charts and their GPS to navigate with they learnt that their voyage clearly showed on Tex's new iPad which ran the iSailor chart software. They considered this an amazing piece of technology.

Some of the trip was smooth while on other days it was quite rough. When things got rough, Tex battled the seas and Lyn turned her hand to polishing up a Morse Key that had been a present from another ALARA member.



Photo 2: The 19th century Western Union key, which is turning out to have a very interesting past as more markings are uncovered all the time.

News from VK5 - Christine VK5CTY

At ALARA's regular luncheon in Adelaide there were nine regular members, including Leslie VK5LOL, back from visiting her family in Townsville (where she was happy to welcome her son-in-law home from Afghanistan) and Jeanne who was in the UK last year and since then has had several trips back and forth to VK6, helping a friend over there who has no family in Australia.

We also had two Sharon's join us. First there was Sharon from ZL land, and also her friend Sharon from Adelaide. But I omitted to take a photo, sorry girls. Our next luncheon

on Friday 13 April will be at Tina VK5TMC's QTH so we can have a Busy Bee, packing goodie bags for the YL International.

The next regular luncheon at the Grand Chancellor in the city will be for the May meeting when several of us will be somewhere in the wilds of Central Australia as part of the extension to the YLMEET in Adelaide.



Photo 3: Jenny VK3WQ at Kyneton.

News from VK3

Here is a short item from Jenny VK3WQ on the Central Victoria RadioFest at Kyneton.

'It wasn't a great day as far as ALARA was concerned, but I enjoyed myself. The hardest part was keeping out of the 'icy blast' and keeping the laminated pictures of various ALARA activities on the table!

I only saw a small number of ALARA members while there but Lia VK3LPH told me as we entered that I wasn't to leave until she'd paid me her membership, or words to that effect. I was happy to catch up with her later, when she had finished her duties on the gate.

Heidi VK3FHID came and spoke to me, and Dianne VK3FDIZ from National Office was working hard on the WIA table, most of the time, though we did get time to chat in the quieter moments'.

Silent Key

Members of the EMDRC were saddened to hear of the death of Andrew VK3BFA who was a regular participant with other OMs at ALARA events.

WICEN Victoria's training exercise – the Murray Marathon 2011

Graham Mason VK3KMG

WICEN Victoria continues to provide training exercises for its members and other amateurs. In late December 2011 the VicSuper Murray Marathon was conducted between Christmas and New Year. This Marathon is a 404 km canoe race on the Murray River, conducted over a five day period between Yarrawonga and Swan Hill.

WICEN provides communication and logistical support during the progress of the event by establishing seven HF stations each day at the checkpoints on the riverbank amongst the red gums. The HF operations were conducted on 80 and 40 metres as a controlled net managed by VK3AWI while the remote stations used special call signs approved by the ACMA, such as Start, Bravo and Finish. WICEN



Photo 1: The WICEN group at the Murray Marathon 2011 event.

thanks amateurs who kept clear of the relevant frequencies to allow us to get on with the exercise.

Each check point also operated on VHF to support another eight stations in boats and cars that



VK5SR

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email: VK5SR@wia.org.au

VK5RMG/6



We're back! Yes, the SERG Convention and Australian Fox Hunting Championship will be held on the Queen's Birthday Weekend - 9th and 10th June 2012.

The Convention will be at its usual home, the Margaret Street Scout Hall. Doors open at 12:00 noon on Saturday with the first fox hunt to start at 11:00am from the Lakes area. On Sunday, doors open at 9:00am. Entry fee is \$5 for the weekend.

We will have the fires going at the hall to keep warm. With our Master Chef back on duty again this year there will be plenty of fine food available to fill the spot.

Ross from Strictly Ham will be there. Stalls with second hand equipment and our Home Brew Contest will be bigger than ever.

Trophy Presentations will be 17:00 at the SERG clubrooms. Following the Presentations we will have a BBQ to catch up on the weekend's activities. All are invited.

Keep up to date at <http://serg.mountgambier.org/> or email VK5SR@WIA.ORG.AU

carried the safety team down the river, keeping track of the canoes during each day's racing. This year VHF operations were on the Coast Guard domestic frequencies and this provided new challenges to operators as they used commercial equipment belonging to another service.

There were only 120 canoes entered in the event this year, and although this was disappointing to YMCA it had no impact on the successful outcome of the training exercise.

Of the twenty-five amateurs that took part only 12 of these were WICEN members but they all shared great camaraderie as they camped together each night. There was plenty of practice setting up stations in remote places and passing of formal messages.

The event will be on again next year between Christmas and New Year. If anyone would like to be involved you can contact the author Graham Mason VK3KMG by telephoning 03 5972 0704 and your name will be placed on next year's list.



Photo 2: The Coast Guard patrol boat on the Murray during the Murray Marathon 2011.



Tableland Radio Group AM and CW on ANZAC DAY

Operate **AM** and **CW** on **ANZAC DAY 2012**.

On ANZAC Day, 25th of April 2012, a group of amateurs in North Queensland, *Tableland Radio Group*, are encouraging all amateurs who can do so, to operate on AM and CW modes during the afternoon and evening of ANZAC Day as a mark of remembrance to the servicemen and women who served our countries during time of conflict.

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VK7news

Justin Giles-Clark VK7TW

✉ vk7tw@via.org.au

www.groups.yahoo.com/group/vk7regionalnews/

Congratulations to Rex VK7MO, David VK3QM/7 and Ken VK3AKK/7 who progressively set the inaugural VK7 24 GHz record up to 161 km from Mt Barrow to Mt Wellington in the last month. Rex also let the author know that a Bass Strait path of 421 km looks very promising thanks to digital mode tests with David VK3HZ/3. We look forward to hearing about more VK7 activity in these microwave bands.

Northern Tasmania Amateur Radio Club

NTARC held their Annual General Meeting (AGM) with the election of the following office holders: President Peter Ralph VK7PL, Vice-President Lewis Lagarto VK3FLPL, Secretary Yvonne Maxwell VK7FYM, Treasurer Kevin Norris VK7HKN and Committee Member Alan Burke VK7AN.

Please note the VK7TAT IRLP node (6700) is back on the air from the VK7RAA repeater on 147 MHz thanks to Tony VK7YBG. The new commercial VK7RAA antenna mounting bracket has been installed

by Air Services Australia staff on their tower to their specifications. Thanks to all who contributed to the cost of replacing this bracket on what is surely VK's best repeater!

Cradle Coast Amateur Radio Club

The CCARC AGM was held on 18 February 2012, with the following office holders elected: President David Spicer VK7EX, Vice-President Dick Van Beek VK7DIK, Secretary Dave Cleland VK7DC, Treasurer Dick Whately VK7FORF and Committee Member Eric Edwards VK7NFI. We welcome and congratulate Rachel Rawlings who passed her Foundation licence assessment and is on the air with the callsign VK7FRMR.

CCARC has had a very busy month with provision of radio communications for the Pure Tasmanian Cycle Challenge which saw 14 amateurs help out with commercial and amateur frequencies being used across the Devonport to Strahan course. I understand that even 40 metres was used for

a particularly difficult part of the course. The following weekend saw many CCARC amateurs help out with an Equine Endurance event in the north-west of VK7.

North West Tasmanian ATV Group

NWATVAG held its AGM on 4 February 2012 with the following office holders elected: President: Tony Bedelph VK7AX, Vice-President: Jim Hiley VK7JH, Secretary: Steve Bush VK7EQ, Treasurer: Ivan Ling VK7XL and Executive Member: Neil Southwell, VK7ZNX. NWATVAG amateurs assisted with radio communications on the 130 km Cradle Coast Rally Challenge held over the February 25/26 weekend.

Radio and Electronics Association of Southern Tasmania

Congratulations to Scott Bragg our recently successful Standard licensee who is now sporting his new callsign of VK7LXX. Our DATV Experimenters' nights welcomed special guests Chris NU3L from the Delaware Lehigh Amateur Radio Club in Pennsylvania USA and David VK3QM and Ken VK3AKK both from the Geelong ARC who had been all over VK7 from 50 MHz to 24 GHz including working five grid squares. Our show and tell included homebrew techniques, robotics platforms, marine radar unit and principles, Meccano No.1 Clockwork Motor, a Brunton Pocket Transit geologist/surveyor's compass and we have been featuring the author's homebrewed 160/80 metre AM/CW valve transmitter of VK3XU design.

Our video presentations have included the CODEC2 talk given to the 2012 Linux Conference and interestingly the first question at the

Photo 1: Watching a Mt Roland sunrise on the cycle course. Photo by VK7EX.





talk, by David Rowe VK5DGR, was asked by Tom VK7NML – on ya Tom! We have included space videos, balloon launches, GE historic videos, AmateurLogic TV episodes and much more. Wednesday nights from 1930 on DVB-T (446.5 MHz) around Hobart and streaming on <http://batc.tv/> and go to members stream - VK7OTC. See you there.



Photo 2: The author and his homebrew 160/80 metre AM/CW valve transmitter. Photo by VK7HT.

BRISBANE AMATEUR RADIO CLUB BARCFEST 2012

Saturday 26th May 2012

This year's BARCFEST will be at Mt Gravatt Showgrounds, Logan Road, Mt Gravatt.

Doors open 9.30 am. Admission \$7.00.

Food and drinks available at reasonable prices.

Hope to see you there on **26th May**.

Contact Les VK4SO ph **0411 729 642** or
email: parkerlf@optusnet.com.au

Please note the change of date for this year only.

Don't forget

23 - 25 June

Winter VHF-UHF Field Day

The Winter VHF-UHF Field Day will be held over the weekend of June 23/24. For full details please refer to the contest web page:

<http://www.wia.org.au/members/contests/vhfuhf/>

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- BUCKMASTER*
- BUXCOMM • ZCG SCALAR*
- SYNCRO • MOBILE ONE*
- OUTBACKER • BENELEC*
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Contests

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Contest Calendar for April 2012 – June 2012

March	3/4	ARRL International DX Contest	SSB
	10/11	RSGB Commonwealth Contest	CW
	17/18	John Moyle Field Day	CW/SSB/FM
	17/19	BARTG RTTY Contest	RTTY
	17/18	Russian DX Contest	CW/SSB
	24/25	CQWW WPX Contest	SSB
April	14	QRP Hours	CW/PSK31/RTTY SSB
	14/15	Japan International DX Contest	CW
	21/22	YU DX Contest	CW/SSB
	28/29	Helvetia Contest	CW/SSB
	28/29	SP DX RTTY Contest	RTTY
May	5	Harry Angel Sprint	CW/SSB
	7	VK/Trans-Tasman 80 metres Phone Contest	SSB
	14/15	CQ-M International DX Contest	CW/SSB
	28/29	CQ WW WPX Contest	CW
June	2/3	IARU Region 1 Field Day	CW
	9	Asia/Pacific Sprint	SSB
	16/17	All Asia DX	CW
	23/24	ARRL Field Day	All

Note: Always check contest dates prior to the contest as they are often subject to change. Also, please note the corrected date for the Harry Angel Sprint contest.

Welcome to this month's Contest column.

Sunshine Coast Radio Club

Trent VK4TS (nee VK4TI) has sent some information about his (now) local radio club. The club gets together for various contest weekends and enjoy portable operation – see the two photos below.

Sunshine Coast Amateur Radio Club have a very good VHF/UHF contesting setup and a keen crew. For the recent Summer VHF UHF Field Day, club members travelled from as far away as Brisbane and Laidley to the site claimed by the club as their own, Howells Knob at Maleny QG63JF. Howells Knob is about four km out of Maleny on the Reesville Road and is almost at the centre of the Sunshine Coast hinterland, offering views over most of Moreton Bay and Brisbane and has been the club's prominent contest site for many years.

The club has their own bright yellow WICEN insignia caravan

for portable purposes and for the larger efforts an additional van from the local SES is pushed into service. Hopefully the push is not to start it! Wayne VK4WS and Richard VK4RY organised the troops and Lester VK4ALH kept a watchful eye over the 6 m logging.

Bands active for the field day were six metres from the club van and two metres, 70 cm and higher were from the SES van. 1296 MHz, 2.4 GHz, 3.4 GHz, 10 GHz and 24 GHz were all used to good effect and the EME team showed off their low signal prowess on many bands. VK4JMC John brought along his backup setup which is attached to the rear of his 4X4 and over the weekend around ten Sunshine Coast members operated from the site. The enticement of the regular club Sunday BBQ on the hill helped motivate a few to make the trip up to the hinterland.

Field Days offer great camaraderie for a club and if your club has not tried one, make it a must do for 2012. Sunshine Coast club finished 3rd place Australia wide Multi Operator 24 hour section which is an effort of some note from remote VK4.

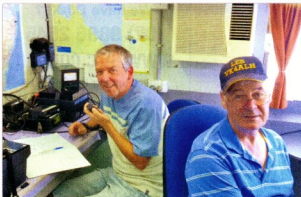


Photo 2: Greg VK4FSCC and Les VK4ALH.



Photo 1: Ches VK4WT, Wayne VK4WS and John VK4JMC and the WICEN caravan.

It is good to see the club making a big effort and getting out and about for the contest. Seeing their set-up takes me back to my time in G-land and contesting with like-minded souls in the RSGB VHF/UHF Field Day every July. It was my task to provide the 70 cm station, so I made a transverter for my FT-1000MP, along with a mast head preamp and chunky linear amplifier. The station worked very well, gaining several wins over the years and I was soon approached by the two metre station operators to build them a similar setup.

Bringing the equipment to the portable site was often fraught with hassles. One year, the large wind-up mast for 70 cm which was being towed along a country lane, suddenly decided to try and overtake the vehicle ahead of it. The tow ball had broken off and the tower was pulled for a while by the safety chain until finding a hedge to hide in. A make-shift attachment was formed between the tower and the car and we sped away, after leaving a note for the hedge owner. My car was behind the tower at the time but I was only just able to stop without hitting anything as my car was weighted down with several large valve amplifiers and their associated anode power supplies. Thanks heavens for ABS.

I still have the 70 cm transverter and all of the VHF/UHF amplifiers that I made all that time ago. Maybe I should dust them off and fire them up someday...

Claimed scores for CQWW SSB 2011

The following callsigns appeared as submitted logs for the contest. It is good to see so many VK callsigns in the listing and so many 'sections' being entered from all of the 'main' call areas of VK.

The chaps at NCRG operated as VI6NC, having acquired permission to use the special prefix for CHOGM in Perth. The prefix may have helped increase the QSO tally as the total for the contest was in excess of 5,000. There were one or two others using the special prefix also from VK6, but I have not heard if they considered it to be an enhancement or not.

M/2 HP

VI6NC...7,056,751.

M/M HP

VK1CC...1,698,477.

M/S HP

VK4KW...8,117,417;
VK2GGC...1,295,325.

SOAB HP

VK3TDX...2,272,536;
VK2IM...1,707,284;
VK7ZE...963,980; VK4IU...738,150;
VK2GWL...344,715;
VK4DMC...253,800;
VK4SDD...158,046;
VK3AVV...156,078;
VK4HG...125,316; VK4GH...94,696;
VK3CTN...21,420; VK2BO...7,812;
VK4VI...7,665; VK2TTP...5,250;
VK2PN...4,278; VK2ACC...2,242;
VK5MK...2,065.

SOAB LP

VK2LAW...581,400;
VK3TZ...200,970;
VK4VDX...200,912;
VK4BOF...131,066;
VK2MWG...92,736;
VK2ERP...83,053; VK4BL...76,050;
VK3FM...51,272; VK3WZ...36,663;
VK4FAT...25,220; VK4XES...24,708;
VK8AR...9,452; VK5AKH...9,024;
VK3SMC...5,671; VK2GR...4,140;
VK8HPB...2,860; VI6CR...2,680;
VK1XYZ...2,279; VK7BEN...2,160;
VK4MON...561; VK5MPJ...70;
VK6WX...0.

SOAB QRP

VK4ATH...50,553.

SOAB(A) HP

VK4QH...2,129,976;
VK2BCQ...247,520;
VK3GK...218,025.

SOAB(A) LP

VK1OO...58,870.

SOSB(A)/10 HP

VK4MA...2,781,980;
VK6DXI...420,840; VI6XX...175,489.

SOSB(A)/10 LP

VK8DX...1,324,432; VK6DU...36,334.

SOSB/10 LP

VK4EJ...138,276; VK2NU...38,420.

SOSB/15 HP

VK4TL...32,370.

SOSB/80 LP

VK1SV...121.

RD Contest – Under New Management

It should be common knowledge that Alan VK4SN is the new contest manager for the RD, with the backing of the Lockyer Valley Radio and Electronics Club. The rules will have undergone something of a revamp and should possibly be on the WIA website; if not already, then they will be soon. It is never an easy task to take on such a challenge as the risk of upsetting someone's appellation is always very apparent. Unfortunately, the rules of the RD have become so convoluted over the years for a myriad of historic reasons, that it is my belief that the appellation not only needs upsetting, but ripping apart and exposed to a full body make over. As per the pommy TV show, a sixty minute make-over would not be enough! I digress! Well, I kind-of digress. I by no means wish to cast aspersions upon anyone's management prowess with a dodgy old metaphor, but a complete revamp is what the RD contest needs – and Alan is the right man for the job. I wish you well in your new endeavours All!

CQWPX SSB 2012

Well, did you have a go in this one? I will give a report on the contest next month but as I sit typing this, the contest is yet to start next month (March) and I am off work fighting off pneumonia. After swallowing more tablets than Moses could carry up a hill, I should be back to full strength again in time to fire up the station and give it a crack along with the rest of the team. It has ruined my chances of participating in BERU however.

All this has meant that preparation time for WPX has been somewhat curtailed. The VK4KW station was originally lined-up for various improvements and upgrades, but these plans have been limited in their execution due to all manner of reasons, including health aspects. This work will have to wait until after WPX, along with a few other upgrades that are currently being planned. The simplest 'upgrade' is likely to be the application for a

licence variation to allow 1 kW output. The additional 3 dB or so will be very welcome, especially on LF where gain is difficult to come by. That having been said, 160 metres does not appear on the allocated bands list for some reason, possibly due to the secondary status for amateur transmissions maybe? 40 metres is also not across the full band, with the upper cut-off being 7.100 MHz, possibly for the same reason.

Although the ACMA offering is currently a temporary facility there should be no reason why VK cannot retain the enhancement, as long as people act sensibly and do not try to operate at these power levels from suburbia, for example. That would be asking for trouble as regards TVI, I suspect. It would be a shame for 'the few' to un-do the hard work and results achieved by the WIA in gaining this excellent licence enhancement.

If you have any contest related material for inclusion within the column, topics that you would like covered or even some experiences and pictures you would like to share, then please feel free to get in touch via vk4baa@wia.org.au
See you on the bands.

73 de VK4BAA Phil Smeaton



Harry Angel Sprint 2102 – Rules

Kevin Johnston VK4UH - Manager, Harry Angel Sprint

Date: Saturday 5 May, 2012, from 1000 UTC – 1146 UTC.

The Harry Angel Sprint is an annual 80 metre contest event, first established in 1999, to commemorate the life of Harry Angel VK4HA who, at the time of his death in 1988 at the age of 106, was the oldest licensed amateur in Australia.

The length of the contest is 106 minutes, in reference to that age.

The contest is open to all amateurs licensed to use 80 metres, including 'single' individual operators or to 'single' operators on behalf of a licensed club or society.

The aim of the competition will be to make as many contacts as possible in the allotted time. Each station may be worked on one occasion only per mode.

There will be three sections, PHONE, CW or MIXED. Entries may only be made in one section.

Frequencies: CW 3500 – 3535 kHz; Phone 3535 – 3590 kHz and 3650 – 3665 kHz.

Exchange: RS(T) and serial number commencing at 001.

Scoring: Two points per CW QSO, one point per phone QSO.

Log: To show time UTC, call sign of stations worked, mode, RS(T) sent and received. Each entry shall be accompanied by a statement to the effect that 'Operation was conducted within the rules and spirit of the competition'.

Entries: Logs may be submitted in electronic format, the preferred method, or printed in the above format. Entries must be received by last post on Monday 21 May, 2012.

Electronic submission to:
harryangel@redclifferradioclub.org.au

Postal submissions to:
Harry Angel Sprint Manager,
Redcliffe and District Radio Club,
Box 20, Woody Point. Qld. 4019.

Certificates will be awarded for the top three entries in each section.

The Harry Angel Sprint 2012 is being managed on behalf of the Redcliffe and District Radio Club by Kevin Johnston VK4UH, following the retirement of Ian Godsill VK3JS. On behalf of the contesting community, the Redcliffe and District Radio Club and the current manager wishes to formally congratulate and thank Ian for the many years of his involvement with this contest.

After 2012 it is anticipated that the contest will again be managed by the Redcliffe and District Radio Club under the auspices of the WIA and its Contest Committee. At that time it is possible that the date and/or rules may be adjusted in line with WIA general contest rules and recommendations as they are developed.

Further information regarding the contest will shortly be posted on the R&DRC website <http://www.redclifferradioclub.org.au>



WIA Contest Website

To keep up to date with all of the major Australian contests, including rules and results, at the WIA Contest Website at:

www.wia.org.au/members/contests/about

COQC QRP Hours Contest 2012

Sponsored by the CW Operators' QRP Club (COQC), the aim of the QRP Hours Contest is to make as many contacts as possible within a one-hour period using your choice of mode. While it is hoped that the event will be strongly supported by COQC members, it is open to all licensed amateur radio operators.

The contest is divided into two (2) one-hour periods. Modes and frequency sub-bands are allocated to each hour as shown in the table below.

Scoring

- Score one (1) point per contact regardless of mode.
- No multipliers apply.
- QRP stations can count contacts with QRO stations towards their final score.

Logs

- Logs must show full details for each QSO, namely time (UTC), station worked, mode, exchange serial sent, and exchange serial received.

Date / Time:	Saturday, 14th April 2012, from 1000-1159 UTC.
Frequency Band:	80 metres – see Frequency/Mode table below.
Category:	Single Operator.
Modes:	CW or PSK31 or RTTY/SSB – see Frequency/Mode table below.
Power:	Preferably 5 watts, but not more than 10 watts average (CW/PSK31/RTTY) or PEP (SSB) at the transmitter output – this is to stress the QRP nature of the event.
Exchange:	A three-digit serial number starting at 001 and incrementing by one for each new contact.
Repeat Contacts:	No repeats – only one contact per mode per hour.

- A Summary Sheet showing operator's callsign, name, address and total points claimed must accompany the Log.
- The preferred method of sending the log is email, but entrants must still include their postal address as per the Summary Sheet.
- Send Logs and Summary Sheet to the Contest Manager, Mike Dower VK2IG – email qrphours@exemail.com.au or snail mail: PO Box 8013, Gundaroo. NSW. 2620.

- Emailed logs must be postmarked no later than 2359 AEST on Wednesday, 2 May, 2012; snail mailed logs must be postmarked no later than Wednesday, 2 May, 2012.
- Feel free to include information about your station and band conditions, and any comments on what you liked or what you'd like to see included or improved.

Certificates will be awarded to the highest scores in each mode in each VK state or territory and ZL.

These rules can also be found at http://vkqrpclub.org/contest_page.php

Frequency / Mode Table			
Hour	Time (UTC)	Mode	Frequency (MHz)
First Hour	1000-1059	CW or PSK31 or RTTY	3.500-3.535 (CW)
			3.620-3.630 (PSK31/RTTY)
Second Hour	1100-1159	SSB	3.550-3.590

Summer VHF-UHF Field Day 2012: Results

Contest Manager: John Martin VK3KM

Most entrants reported favourable weather (except for some rain in parts of VK2 and VK4), and plenty of activity. The total number of logs was 93, and there was activity on

all bands up to 47 GHz. The section winners were: Iain Crawford VK5ZD, Ralph Edgar VK3WRE, multi operator stations VK3UHF and VK3ALB, Barry Miller VK3BJM and Tim Dixon VK5ZT.

Congratulations to all, and thanks to all participants for making another successful Field Day.

The next Field Day will be held over the weekend of June 23/24.

Call	Name	Location	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	47 GHz	TOTAL
Section A: Single Operator, 24 Hours													
VK5ZD	Iain Crawford	PF95, PF96	59	336	565	888	890	910	800	800	660	-	5908
VK5KK	David Minchin	PF95, PF95	53	174	400	712	730	730	670	670	550	-	4689
VK3WRE	Ralph Edgar	QF31	-	492	750	896	870	370	440	440	-	-	4258
VK3JTM	Tim Morgan	QF12	61	429	615	872	840	-	380	610	-	-	3807
VK4OE	Doug Friend	QG61, QG62	59	333	390	536	580	430	420	550	320	-	3618
VK5TX	Ben Hennessy	PF95	21	342	535	672	460	330	440	-	-	-	2800
VK5LD	Dale Loffler	PF96	86	474	810	744	-	-	-	-	-	-	2114
VK3LY	Bill Day	QF03	108	477	615	704	-	-	-	-	-	-	1904
VK4HBG	John Collins	QG62	76	624	435	-	-	-	-	-	-	-	1135

Call	Name	Location	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	47 GHz	TOTAL
VK5OQ	Keith Gooley	PF95	70	201	275	272	-	210	-	-	-	-	1028
VK1DSH	Dale Hughes	QF45	43	327	180	224	-	-	-	210	-	-	984
VK2AMS	Mark Swannack	QF68	28	237	220	192	230	-	-	-	-	-	907
VK5AR	Alan Raftery	PF94, PF95	59	261	420	-	-	-	-	-	-	-	740
VK1AI	Greg Patkhurst	QF44	60	417	260	-	-	-	-	-	-	-	737
VK2JDS	David Scott	QF46	-	219	160	168	-	-	-	-	-	-	547
VK5KLV	Les Virgo	PF87	78	183	170	-	-	-	-	-	-	-	431
VK3AZR	Trevor Jones	QF22	50	126	190	-	-	-	-	-	-	-	366
VK5NY	Roger Bowman	PF94	73	135	37	-	-	-	-	-	-	-	245
Section B: Single Operator, 8 Hours													
VK3WRE	Ralph Edgar	QF31	-	456	705	840	710	350	430	430	-	-	3921
VK5KK	David Minchin	PF95	21	105	255	496	500	500	450	450	330	-	3107
VK2XDE	Steven Harrison	QF67, QF68	44	165	220	352	440	440	440	550	330	-	2981
VK3JTM	Tim Morgan	QF12	56	258	415	664	670	-	330	550	-	-	2943
VK2DAG	Matt Hetherington	QF58	44	132	220	352	440	440	440	440	330	-	2838
VK5TX	Ben Hennessy	PF95	21	243	400	560	450	330	440	-	-	-	2444
VK3HY	Gavin Brain	QF32	81	540	665	704	-	-	-	330	-	-	2320
VK3YFL	Bryon Dunkley-Smith	QF22	73	372	440	680	-	-	-	350	-	-	1915
VK5TE	Simon Brandenburg	PF94	47	225	315	464	350	360	-	-	-	-	1761
VK5NI	John Ross	PF95	23	186	230	328	-	340	-	330	-	-	1437
VK5LD	Dale Loffler	PF96	68	300	500	560	-	-	-	-	-	-	1428
VK2GG	Dan Joyce	QF56, QF57	43	171	230	344	-	-	-	540	-	-	1328
VK2HRX	Compton Allen	QF56	41	315	395	376	-	-	-	-	-	-	1127
VK5AIM	Steve Mahoney	PF95	68	141	230	256	-	210	-	-	-	-	905
VK4ADC	Doug Hunter	QG61	54	183	250	176	-	-	-	-	-	-	663
VK3TCX	Ian Hoffman	QF42	44	222	190	-	-	-	-	-	-	-	456
VK5KLV	Les Virgo	PF87	78	177	170	-	-	-	-	-	-	-	425
VK5KPR	Peter Banks	PF87	66	177	110	-	-	-	-	-	-	-	343
VK3ZHQ	Eric Warren-Smith	QF22	21	228	-	-	-	-	-	-	-	-	249
Section C: Multi Operator, 24 Hours													
VK3UHF		QF21	216	828	1255	1352	1090	850	870	1000	590	540	8591
VK3ALB		QF11	60	519	630	752	770	480	590	500	230	-	4531
VK4WS	SCARC	QG63	310	492	580	544	470	320	-	320	210	-	3246
VK3KQ		QF13	96	732	675	680	530	-	-	-	-	-	2713
VK5ARC	SCARC	PF94	156	582	680	744	-	-	-	-	-	-	2162
VK2BOZ		QF68	87	717	630	488	-	-	-	-	-	-	1922
VK1DA		QF44	90	624	660	328	-	-	-	210	-	-	1912
VK4WE	CBRS	QG61	100	501	435	616	-	-	-	-	-	-	1652
VK4GHZ		QG61	72	366	435	360	-	-	-	-	-	-	1233
VK3YVG	YVARG	QF22	123	537	-	-	-	-	-	-	-	-	660
VK1MT		QF44	50	294	240	-	-	-	-	-	-	-	584
Section D: Multi Operator, 8 Hours													
VK3ALB		QF11	57	423	560	688	730	460	570	470	220	-	4178
VK3TPR		QF21	-	342	550	856	920	330	220	570	220	-	3998
VK5SR	SERG	QF02	67	396	565	648	450	330	330	460	-	-	3246
VK3KQ		QF13	68	465	545	480	450	-	-	-	-	-	2008
VK4IZ	RDRC	QG62	72	246	295	384	-	-	-	210	-	-	1207
VK2MB	MWRS	QF56	-	324	270	-	-	-	-	-	-	-	594
VK2LE	SGARS	QF56	66	183	295	-	-	-	-	-	-	-	544
VK2WFD		QF56	38	285	190	-	-	-	-	-	-	-	513
VK3EGC	EGARC	QF42	33	186	170	-	-	-	-	-	-	-	389
Section E: Home Station, 24 Hours													
VK3BJM	Barry Miller	QF22	173	702	725	928	860	-	-	-	-	-	3388
VK3MY	Ross Keogh	QF22	116	624	875	968	610	-	-	-	-	-	3193
VK5AKM	Keith Minchin	PF95	33	249	530	640	630	710	-	-	-	-	2792
VK3VFO	Nick Kraehe	QF31	26	645	660	448	340	-	-	-	-	-	2119
VK3NFI	Dean Webster	QF31	22	486	545	616	-	-	-	-	-	-	1669
VK3QI	Peter Forbes	QF22	-	207	275	792	350	-	-	-	-	-	1624
VK3BQ	Andrew Scott	QF22	78	489	510	504	-	-	-	-	-	-	1581
VK4VDX	Roland Lang	QG62	48	405	460	448	-	-	-	-	-	-	1361
VK4NE	Mick Marinkovic	QG62	135	321	330	464	-	-	-	-	-	-	1250
VK1KW	Robert Quick	QF44	68	387	315	320	-	-	-	-	-	-	1090
VK5KC	David Clegg	PF94	47	186	330	472	-	-	-	-	-	-	1035
VK4KLC	Ron Melton	QG62	191	333	470	-	-	-	-	-	-	-	994
VK5NE	Paul Roehrs	PF95	37	252	390	304	-	-	-	-	-	-	983

Call	Name	Location	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	47 GHz	TOTAL
VK4JAM	Andrew Mason	QG62	56	198	260	392	-	-	-	-	-	-	906
VK5ALX	Alex Gliniski	PF86	68	258	335	208	-	-	-	-	-	-	869
VK4ZDP	David Purkis	QH32	59	228	295	184	-	-	-	-	-	-	766
VK3AVV	Mike Subocz	QF22	26	414	280	-	-	-	-	-	-	-	720
VK2EI	Neil Sandford	QF68	38	285	160	-	230	-	-	-	-	-	713
VK5OM	Jim Bywaters	QF03	-	129	210	336	-	-	-	-	-	-	675
VK2TG	Robert Demkiw	QF55	54	288	305	-	-	-	-	-	-	-	647
VK3JVL	David Harms	QF33	-	306	335	-	-	-	-	-	-	-	641
VK4NBL	Peter Fauth	QG63	36	165	195	192	-	-	-	-	-	-	588
VK3TOM	Tom Steadman	QF31	25	237	270	-	-	-	-	-	-	-	532
VK5PPAW	Paul Schulz	PF95	-	213	300	-	-	-	-	-	-	-	513
VK3WWW	Jack Bramham	QF22	-	129	115	176	-	-	-	-	-	-	420
VK2NR	David Porter	QF56	32	168	185	-	-	-	-	-	-	-	385
VK5VAB	Bruce Gauci	PF95	22	162	190	-	-	-	-	-	-	-	374
VK1FD	Daniel Flakelar	QF44	55	108	155	-	-	-	-	-	-	-	318
VK5ZQV	Gerard Rankin	PF95	-	123	185	-	-	-	-	-	-	-	308
VK5KX	Peter Murphy	PF95	-	108	70	-	-	-	-	-	-	-	278
VK2ZQX	John Watson	QF58	-	105	-	-	-	-	-	-	-	-	105
VK2ACL	Matt Maguire	QF56	21	-	-	-	-	-	-	-	-	-	21

Section F: Rover Station, 24 Hours

VK5ZT	Tim Dixon	PF85, PF86, PF94, PF95, PF96											
			75	366	575	896	990	900	990	980	740	-	6512
VK5KK	David Minchin	PF84, 94, 95	53	207	490	848	860	850	790	790	760	-	5648
VK2CU	Justin Lavery	QF57, QF58, QF59, QF68, QF69, QG50											
			90	357	470	736	560	560	560	560	440	-	4333
VK3AKK	Ken Jewell	QF11, 12, 21, 22	-	-	-	-	-	540	430	-	540	540	2050

Notes

- VK1A Andrew Davis VK1DA, Adan Willemse VK1FJAW
 VK1MT Matt Bowman VK1MT, Shane Goodwin VK1MAD
 VK2LE St George Amateur Radio Society: Paul Howarth VK2GX, Greg Bain VK2HIP, Cameron McKay VK2CKP, Lesley Stanger (SWL)
 VK2MB Manly-Warringah Radio Society: Nick VK2FS, Geoff VK2MIA, Carlo VK2FLUX
 VK2BOZ Cris Perrett VK2BOZ, Brenda Taylor VK2FSMI, Doug Tufrey VK2FWWD
 VK2WFD Col Matten VK2KCM, Carlos Peco VK2KTS, Rod Jarman VK2FVRJ, Ed Durrant VK2ARE
 VK3KQ Damian VK3KQ, Ralph VK3LL
 VK3ALB Lou Blasco VK3ALB, Nik Presser VK3BA, Peter Westgarth VK3APW, Jenni Blasco VK3FJEN, Michael Blasco VK3FMIC
 VK3EGC East Gippsland ARC: Zac Brown VK3FZRB, Ian Hoffman VK3TCX
 VK3TPR Michael Coleman VK3KH, Alan Devlin VK3XPD, Peter Roberts VK3TPR
 VK3UHF Ken Jewell VK3NW, Charlie Kahwagi VK3NX, Chas Gnaccarini VK3PY, David Learmonth VK3QM, Arie Groen VK3AMZ, Carlo Leone VK3BCL
 VK3YVG Yarra Valley Amateur Radio Group: Brian VK3ABJ, Rob VK3PPC, Fred VK3DAC, Kevin VK3AUQ, Steve VK3TSR, Ken VK3TKQ, Trevor VK3HTL
 VK4IZ Redcliffe & District Radio Club: Kevin Johnston VK4UH, David Close VK4DC, John Maudsley VK4YJV, Peter Schrader VK4EA
 VK4GHZ Alan VK4WR, Graeme VK4FI, Scott VK4CZ, Adam VK4GHZ
 VK4WIE City of Brisbane Radio Society: John Morris VK4MJF, Glen Noble VK4KSY, Darren Bumpstead VK4DJB, Ken Myers VK4GC
 VK4WIS Sunshine Coast ARC: Ches Bassingthwaite VK4WT, Glen Campbell VK4FSCC, Kirsty Golder VK4FXYL, Leicester Hibbert VK4ALH, John McPherson VK4JMC, Richard Philp VK4RY, Wayne Shaw VK4WS
 VK5ARC South Coast Amateur Radio Club: Barry Bates VK5KBJ, Stef Daniels VK5HSX, Alex Daniels (SWL)
 VK5SR South East Radio Group: Charles VK5HD, Trevor VK5NC, Owen VK5FORS, Colin VK5DK



Don't forget

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WIA Board Coordinator Philip Adams VK3JNI vk3jni@wia.org.au

Ross Hull Memorial VHF-UHF Contest 2012: Results

Contest manager: John Martin VK3KM

This year's results are a very mixed bag. In Section A, the top two scores were gained by Bob McQuarrie ZL3TY and Stephen Hayman ZL1TPH - the first time the Ross Hull Contest has been won by a station outside Australia. Coming third as the top scoring VK station was Ted Thrift VK2ARA. And who says there isn't enough activity in VK6? Next in line was Barrie Burns VK6ADI.

In the digital section, top score went to Dave VK2JDS with a log of 1296 MHz EME contacts, followed by one station from each of VK1, 4, 6, 7 and ZL. Congratulations to all.

These scores provide plenty of

food for thought. The number of logs is on the increase again, but with only one or two entrants from each call area, there is certainly plenty of opportunity for others to join in and to do very well.

There were plenty of stations making DX contacts during the contest, but they didn't send in logs. One reason is that during DX openings, time is often too short to exchange serial numbers or to explain the contest to people who haven't participated before. The rules allow the exchange of serial numbers to be skipped for contacts made during short-lived openings. It may

help next time if the rule is further relaxed to require only the exchange of callsigns and signal reports for any contacts. This rule already applies to Section B, so maybe it should apply to Section A as well. That would mean that any contact you make would be eligible to go straight into your Ross Hull Contest entry.

Remember that the contest runs for a month but scoring is based on the best seven days during that month. But you do not need to operate for even seven days. Many of this year's entrants sent in logs that covered only three or four days of operation.

Call	Name	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	47 GHz	TOTAL
Section A: All Bands												
ZL3TY	Bob McQuarrie	-	5145	-	-	-	-	-	-	-	-	5145
ZL1TPH	Stephen Hayman	-	3258	415	-	-	-	-	-	-	-	3673
VK2ARA	Ted Thrift	1704	591	50	-	-	-	-	-	-	-	2345
VK6ADI	Barrie Burns	1584	54	20	-	-	-	-	-	-	-	1658
VK2AH	Brian Farrar	1150	687	150	-	-	-	-	-	-	-	1987
VK5APN	Wayne Pearson	-	1626	-	-	-	-	-	-	-	-	1626
VK2JDS	David Scott	-	-	-	1256	-	-	-	-	-	-	1256
VK3HY	Gavin Brain	34	201	225	216	-	-	-	50	-	-	726
VK3YFL	Bryon Dunkley-Smith	52	108	90	144	-	-	-	40	-	-	434
VK3FEZZ	John Witte	-	39	25	-	-	-	-	-	-	-	64
Section B: All Bands, Digital Modes												
VK2JDS	David Scott	-	-	-	12800	-	-	-	-	-	-	12800
VK5APN	Wayne Pearson	-	9930	-	-	-	-	-	-	-	-	9940
VK4CDI	Phil Moat	-	-	1450	3266	-	-	-	-	-	-	4716
ZL3TY	Bob McQuarrie	-	1251	-	-	-	-	-	-	-	-	1251
VK7MO	Rex Moncur	-	-	755	-	-	-	-	450	-	-	1205
VK1WJ	Waldis Jirgens	-	255	-	-	-	-	-	-	-	-	255
VK6ADI	Barrie Burns	22	42	5	-	-	-	-	-	-	-	69

GippsTech 2012

Those wishing to present at this year's conference should contact the Chair as soon as possible:

vk3pf@wia.org.au

Peter VK3PF
Conference Chair

It is almost that time again: GippsTech 2012 will be happening on the weekend of 7 and 8 July, at Monash University Gippsland Campus in Churchill, Victoria, about 170 km east of Melbourne.

GippsTech has a well-recognised reputation as a premier amateur radio technical conference, with its focus primarily on techniques applicable in the VHF, UHF and microwave bands, especially for weak-signal contacts. Even if you are new to these areas of amateur radio, you will learn a great deal of information during the weekend.

A Partner's Tour will be conducted, together with an informal social gathering for dinner on Friday and a Conference Dinner on Saturday.

Details of the conference are available from the Eastern Zone Amateur Radio Club website: <http://www.vk3bez.org/>

Registration forms will be available in the near future.

Gridsquare Standings at 17 February 2012

Guy Fletcher VK2KU

144 MHz	Terrestrial	
VK2FLR	Mike	120
VK3NX	Charlie	107
VK2KU	Guy	102
VK3HZ	David	91
VK3PF	Peter	90
VK2ZT	Steve	86 SSB
VK5AKK	Phil	84 SSB
VK3PY	Chas	80 SSB
VK2ZAB	Gordon	78 SSB
VK2DVZ	Ross	77 SSB
VK3BDL	Mike	71 SSB
VK3BJM	Barry	69 SSB
VK2AMS	Mark	68 SSB
VK3II	Jim	66
VK3QM	David	66 SSB
VK7MO	Rex	66
VK2EI	Neil	65
VK2TK	John	62
VK3II	Jim	62 SSB
VK2MER	Kirk	61 SSB
VK3WRE	Ralph	60 SSB
VK4FNQ	John	59
VK4FNQ	John	58 SSB
VK3PF	Peter	56 SSB
VK5BC/p	Brian	55 SSB
VK5BC	Brian	53 SSB
VK3KH	Michael	52 SSB
VK3ZLS	Les	51 SSB
VK4CDI	Phil	51
VK3HY	Gavin	49
VK4CDI	Phil	47 SSB
VK3VG	Trevor	46 SSB
VK7MO	Rex	46 SSB
VK7MO	Rex	46 Digi
VK3AKK	Ken	45 SSB
VK4KZR	Rod	43
ZL3TY	Bob	42
VK4TJ	John	41 SSB
VK3EJ	Gordon	40 SSB
VK3PF	Peter	40 Digi
VK2TG	Bob	39 SSB
VK3UH	Ken	38
VK2TK	John	35 SSB
VK3DXE	Alan	35
VK2KOL	Colin	34 SSB
VK3II	Jim	33 Digi
VK3ZUX	Denis	33 SSB
VK1DA/p	Andrew	31
VK1WJ	Waldis	29
VK3DXE	Alan	28 SSB
VK4KSY	David	28 SSB
VK2TK	John	27 Digi
VK1WJ	Waldis	25 Digi
VK4CDI	Phil	25 Digi
VK3TLW	Mark	24 SSB
VK4EME	Allan	23
VK3ALB/p	GARC Team	22 SSB
VK3BG	Ed	22 SSB
VK3KH	Michael	21 Digi
VK3ECH	Rob	20 SSB

VK6KZ	Wally	20
VK2ZT	Steve	19 Digi
VK4EME	Allan	19 SSB
VK3AL	Alan	18 SSB
VK6KZ/p	Wally	16
ZL3TY	Bob	15 Digi
VK5APN	Wayne	13
VK2DVZ	Ross	12 Digi
VK2EI	Neil	12 Digi
VK4EME	Allan	12 Digi
VK2AMS	Mark	10 Digi
VK2KOL	Colin	9 Digi
VK1WJ	Waldis	7 SSB
VK5APN	Wayne	7 Digi
VK5APN	Wayne	7 SSB
ZL3TY	Bob	7 CW
VK1WJ	Waldis	5 CW
VK4AE	Denis	5 SSB
VK4KSY	David	5 Digi
VK4JAZ	Grant	4 FM
VK2GG	Dan	3
VK3DXE	Alan	2 Digi
VK3DXE	Alan	2 CW
VK3QM	David	1 Digi
VK4FNQ	John	1 FM

144 MHz	EME	
VK2KU	Guy	464
VK2KU	Guy	450 Digi
ZL3TY	Bob	403
VK3AXH	Ian	343 Digi
VK4CDI	Phil	249 Digi
VK5APN	Wayne	234
VK5APN	Wayne	229 Digi
VK7MO	Rex	157 Digi
VK2FLR	Mike	120
VK2DVZ	Ross	110 Digi
VK3II	Jim	87 Digi
VK2AWD	David	82 Digi
VK3KH	Michael	50 Digi
VK2KU	Guy	44 CW
VK3DDU	Paul	39 Digi
VK2ZT	Steve	28 Digi
VK3HZ	David	19
VK5APN	Wayne	15 CW
VK3DXE	Alan	7 Digi
VK3NX	Charlie	5 CW
VK4EME	Allan	5 Digi
VK3AXH	Ian	3 CW
VK2DVZ	Ross	2 CW
VK3AXH	Ian	1 SSB

432 MHz	Terrestrial	
VK2ZAB	Gordon	57 SSB
VK3PY	Chas	51 SSB
VK3NX	Charlie	50 SSB
VK3QM	David	50 SSB
VK3HZ	David	40
VK3ZLS	Les	40 SSB
VK3BJM	Barry	39 SSB
VK5AKK	Phil	39 SSB
VK2KU	Guy	38

VK2ZT	Steve	35 SSB
VK2DVZ	Ross	34 SSB
VK3BDL	Mike	34 SSB
VK3WRE	Ralph	33 SSB
VK3PF	Peter	32
VK3PF	Peter	30 SSB
VK5BC	Brian	26 SSB
VK1DA/p	Andrew	24
VK2MER	Kirk	24 SSB
VK3KH	Michael	22 SSB
VK3VG	Trevor	20 SSB
VK5BC/p	Brian	20 SSB
VK7MO	Rex	20
VK2AMS	Mark	19 SSB
VK2TK	John	18
VK3ALB/p	GARC Team	18 SSB
VK7MO	Rex	18 SSB
VK2TK	John	17 SSB
VK3AKK	Ken	15 SSB
VK3BG	Ed	15 SSB
VK3TLW	Mark	15 SSB
VK3ZUX	Denis	15 SSB
VK4CDI	Phil	15
VK4CDI	Phil	15 SSB
VK4KZR	Rod	15
VK6KZ	Wally	13
VK2EI	Neil	12 SSB
VK2KOL	Colin	12 SSB
VK2TG	Bob	11 SSB
VK4TJ	John	11 SSB
VK3AL	Alan	10 SSB
VK3ECH	Rob	10 SSB
VK4FNQ	John	10 SSB
VK3UH	Ken	8
VK6KZ/p	Wally	8
VK3KH	Michael	7 Digi
VK7MO	Rex	7 Digi
ZL3TY	Bob	7
VK4CDI	Phil	6 Digi
VK4EME	Allan	6 SSB
VK1WJ	Waldis	5 SSB
VK2DVZ	Ross	4 Digi
VK2ZT	Steve	4 Digi
VK3PF	Peter	4 Digi
VK3PY	Chas	4 Digi
VK3QM	David	4 Digi
VK2AMS	Mark	3 Digi
VK3DXE	Alan	3 SSB
VK4AIG	Denis	3 SSB
VK4JAZ	Grant	3 FM
VK2GG	Dan	2
VK2KOL	Colin	1 Digi
VK2TK	John	1 Digi

432 MHz	EME	
VK4EME	Allan	62
VK4EME	Allan	57 Digi
VK4CDI	Phil	39 Digi
VK7MO	Rex	10
VK4EME	Allan	9 CW
VK7MO	Rex	9 Digi
VK3NX	Charlie	5 CW

VK3AXH	Ian	4 Digi
VK3HZ	David	4
VK3KH	Michael	3 Digi
VK3NX	Charlie	3 Digi
VK2ZT	Steve	2 Digi
VK5BC	Brian	1
ZL3TY	Bob	1
1296 MHz Terrestrial		
VK3PY	Chas	41 SSB
VK3QM	David	41 SSB
VK3NX	Charlie	37 SSB
VK2ZAB	Gordon	29 SSB
VK2DVZ	Ross	26 SSB
VK3ZLS	Les	26 SSB
VK5AKK	Phil	26 SSB
VK2KU	Guy	25
VK3BJM	Barry	22 SSB
VK3PF	Peter	22
VK3PF	Peter	20 SSB
VK3WRE	Ralph	20 SSB
VK3HZ	David	19
VK3KWA	John	19
VK3BDL	Mike	18 SSB
VK3KH	Michael	17 SSB
VK3ALB/p	GARC Team	16 SSB
VK2ZT	Steve	13 SSB
VK3VG	Trevor	12 SSB
VK4KZR	Rod	12
VK3BG	Ed	11 SSB
VK5BC	Brian	11 SSB
VK7MO	Rex	11 SSB
VK1DA/p	Andrew	10
VK2TK	John	10 SSB
VK2AMS	Mark	9 SSB
VK5BC/p	Brian	9 SSB
VK3TLW	Mark	8 SSB
VK3AL	Alan	7 SSB
VK3UH	Ken	7
VK2MER	Kirk	6
VK3ECH	Rob	6 SSB
VK3ZUX	Denis	5 SSB
VK4CDI	Phil	5
VK4CDI	Phil	5 SSB
VK4JTJ	John	5 SSB
VK6KZ/p	Wally	5
VK3KH	Michael	4 Digi
VK6KZ	Wally	4
VK4EME	Allan	3 SSB
VK7MO	Rex	3 Digi
VK2EI	Neil	2 SSB
VK2GG	Dan	2
VK2TG	Bob	2 SSB
VK3PF	Peter	2 Digi
VK3QM	David	2 Digi
VK4AJG	Denis	2 SSB
VK4CDI	Phil	2 Digi
VK4FNO	John	2 SSB
VK2DVZ	Ross	1 Digi
VK2ZT	Steve	1 Digi
ZL3TY	Bob	1 SSB
1296 MHz EME		
VK4CDI	Phil	78
VK4CDI	Phil	66 Digi
VK3NX	Charlie	56 CW
VK7MO	Rex	41
VK7MO	Rex	36 Digi
VK4CDI	Phil	27 CW

VK2AMS	Mark	20 Digi
VK3AXH	Ian	14 Digi
VK4CDI	Phil	3 SSB
2.4 GHz Terrestrial		
VK3PY	Chas	18 SSB
VK3NX	Charlie	17 SSB
VK3QM	David	17 SSB
VK3AKK	Ken	15 SSB
VK3WRE	Ralph	11 SSB
VK3ALB/p	GARC Team	7 SSB
VK3BJM	Barry	7 SSB
VK3PF	Peter	7 SSB
VK3KH	Michael	6 SSB
VK3HZ	David	5
VK4KZR	Rod	4
VK6KZ	Wally	4
VK2EI	Neil	3 SSB
VK3KH	Michael	3 Digi
VK1DA/p	Andrew	2
VK2AMS	Mark	2 SSB
VK2GG	Dan	2
VK3PF	Peter	2 Digi
VK2DVZ	Ross	1 SSB
VK3BG	Ed	1 SSB
VK3TLW	Mark	1 SSB
VK3ZUX	Denis	1 SSB
2.4 GHz EME		
VK3NX	Charlie	41 CW
VK7MO	Rex	14
VK7MO	Rex	10 Digi
3.4 GHz Terrestrial		
VK3NX	Charlie	14 SSB
VK3QM	David	14 SSB
VK3WRE	Ralph	9 SSB
VK3PY	Chas	7 SSB
VK3PF	Peter	6 SSB
VK6KZ	Wally	4
VK2AMS	Mark	2 SSB
VK2GG	Dan	2
VK2AMS	Mark	1 Digi
VK2EI	Neil	1 SSB
VK2EI	Neil	1 Digi
3.4 GHz EME		
VK3NX	Charlie	16 CW
5.7 GHz TERRESTRIAL		
VK3NX	Charlie	14 SSB
VK3QM	David	12 SSB
VK3PY	Chas	11 SSB
VK3WRE	Ralph	9 SSB
VK3PF	Peter	7 SSB
VK3ALB/p	GARC Team	6 SSB
VK6KZ	Wally	4
VK2GG	Dan	3
VK3BJM	Barry	2 SSB
VK3PF	Peter	2 Digi
VK6BHT	Neil	2 SSB
VK2AMS	Mark	1 SSB
VK2EI	Neil	1 SSB
VK3ZUX	Denis	1 SSB
5.7 GHz EME		
VK3NX	Charlie	24 CW
10 GHz Terrestrial		
VK3HZ	David	69
VK3HZ	David	27 SSB

VK3PY	Chas	20 SSB
VK3QM	David	17 SSB
VK3AKK	Ken	16 SSB
VK3NX	Charlie	16 SSB
VK3PF	Peter	11 SSB
VK3WRE	Ralph	11 SSB
VK6BHT	Neil	9 SSB
VK3ALB/p	GARC Team	7 SSB
VK2EI	Neil	6
VK6KZ	Wally	5
VK2AMS	Mark	3 SSB
VK2EI	Neil	3 Digi
VK2EM	Bruce	3 SSB
VK3KH	Michael	3 SSB
VK3KH	Michael	3 Digi
VK3TLW	Mark	3 SSB
VK7MO	Rex	3
VK2GG	Dan	2
VK3BJM	Barry	2 SSB
VK3UH	Ken	2
VK3ZUX	Denis	2 SSB
VK4KZR	Rod	2
VK1DA/p	Andrew	1
VK3BG	Ed	1 SSB
VK3NX	Charlie	1 Digi
10 GHz EME		
VK3NX	Charlie	16 CW
24 GHz Terrestrial		
VK3NX	Charlie	4 SSB
VK3QM	David	3 SSB
VK6BHT	Neil	3 SSB
VK2EI	Neil	2 SSB
VK2GG	Dan	2
VK6KZ	Wally	2
VK3WRE	Ralph	1 SSB
47 GHz Terrestrial		
VK3NX	Charlie	4 SSB
VK3QM	David	4 SSB
VK2GG	Dan	2
76 GHz Terrestrial		
VK3KH	Michael	1 SSB
122 GHz Terrestrial		
VK3KH	Michael	1 SSB
474 THz		
VK3WRE	Ralph	3 AM
VK3HZ	David	2
VK7MO	Rex	2
VK7MO	Rex	2 Digi
VK7TW	Justin	2
VK7TW	Justin	1 Digi

Additions, updates and requests for the guidelines to Guy VK2KU.

The guidelines (and the latest League Table) are also available on the VK VHF DX Site at <http://vhfdx.radiocorner.net> - click on Gridsquares.

Next update of this table will close on or about 15 June 2012.

Stations who do not confirm their status for more than 12 months may be dropped from the table.





VK3news

Tony Collis VK3JGC

Geelong Amateur Radio Club - The GARC

The Tasmanian microwave DXpedition

For some time now the microwave experimenters group (LUMEG) within the Geelong Amateur Radio Club have been chasing grid squares as a means of proving the efficiency of the equipment that they have designed and assembled over many years. VK7 offered six grid squares across the northern half of Tasmania with the potential of distances in excess of 400 km. As there is limited microwave activity below 10 GHz in Tasmania the GARC experimenters group decided to do it themselves. In all they spent 10 days on the island after travelling there by ferry with all the gear in David VK3QM's four wheel drive.

Their primary aim was to work the GARC home team of Chas VK3PY, Charlie VK3NX and Lou VK3ALB from QE38 Devonport, QE28 Burnie, QE29 Table Cape, QE39 Petal Point, QE49 Mussleroe Bay and QE48 Mt Poimena. The expedition was equipped for all bands from 50 MHz to 24 GHz, although the highest band was a last minute inclusion.

On the day they landed they operated from the three north-west grids, QE38, QE28 and QE29. That night they drove across the island and in the morning set up camp first in QE49 then in QE39. They then drove down the east coast to QE47 where they worked Rex VK7MO on four bands and then moved on to Hobart.



Photo 2: David VK3QM and Peter VK7PD.



Photo 1: The Tasmanian DXpedition microwave set-up.

Whilst they were there they did some tests with Rex and had their first two way contact in VK7 on 24 GHz.

A day or so later they moved back north again where they operated from Mt Barrow, the site of the VK7RAA repeater, and established a VK7 record on 24 GHz of approximately 160 km, back to Mt Wellington near Hobart with Rex VK7MO.

Back on the road again it was off to Mt Poimena and QE48 where they had to carry all the gear one km up the mountain to operate from the final grid square. Ken and David then went off to stay with VK7PD for a rest and meet some of the locals before catching the ferry back to Victoria. As a result of this operation many people worked new grid squares on various bands and the team had about 300 contacts across Bass Strait on all the microwave bands, except 24 GHz.

In all eight GARC members were worked including Gary VK3FWGR who was the only F call they heard. The expedition established new VK3 to VK7 distance records on 2.4 GHz and 5.7 GHz, at approximately 470 km and they also found time to visit amateur radio clubs in both Hobart and Launceston.

In all the expedition, over the 10 day period, provided a lot of activity on the VHF, UHF and microwave bands as well as developing some valuable VK7 contacts for a return visit in the future; with a view to activating some more, rare, grid squares. Thanks to Ken VK3NW for the narrative and David VK3QM for the photographs.



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Foundation Corner 19:

An introduction to amateur satellites

Ross Pittard VK3CE

Australian amateurs have been at the forefront of amateur satellite communications since the inception of the amateur satellite program. Oscar 5, built at University of Melbourne was launched on a Thor Delta rocket from the Vandenberg Air Force base in the USA on 23 January, 1970. It was piggy backed with a TIROS-M weather satellite. Students at the university constructed the battery powered satellite which transmitted telemetry data on both the 2 m and 10 m amateur bands and was one of the forerunners of the modern amateur communication satellites.

Since these early experiments amateurs from around the world have all participated in the design and construction of amateur satellites. For a complete list of the satellites past and present have a look at Wikipedia, per Reference 1.

Amateur Radio magazine publishes a list of the operational satellites twice a year (January/July) which provides useful information on the transponder frequencies, satellite status and beacon frequencies. For many new amateurs it looks a daunting prospect to be able to work through an amateur satellite. In the case of satellites using 23 cm and higher frequencies this is certainly true, but surprisingly a dual band hand held radio even with a rubber ducky antenna and a piece of prediction software is really all that is required to begin using and enjoying the amateur satellites.

One of the easier satellites to work for the beginner is AO-51; launched in 2004 this satellite has, amongst others, an FM transponder 145.920 MHz uplink and 435.300 MHz downlink with a 67 Hz tone access. The current status of AO-51 can be seen at Reference 2. (Editor's Note: As of mid-September 2011, AO-51 has only limited operational capability and may have failed before

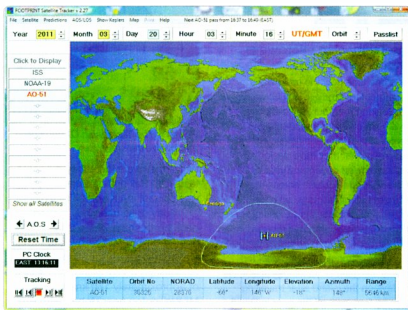


Photo 1: Screen shot of footprint program in action.

this article is published.)

There are many programs around to predict satellite passes, both freeware and commercial; the one I use is called 'Footprint', available at Reference 4. It is easy to install and the best part is it is free. As the name implies the program displays a map of the world with the 'footprint' of the satellite superimposed on it, continually updating in real time, and it is only a matter of glancing at the screen to see if the satellite is within range. To be able to accurately predict satellite passes the program requires what is called Keplerian elements; this is data provided by NASA that gives the current orbital characteristics of the satellite in question. I subscribe to these on the AMSAT web site, Reference 5, and they contain Keps for all the amateur and weather satellites, as well as the space shuttle, and are emailed to me every Friday afternoon. Once received it is a simple matter of importing and saving them into the 'Footprint' program.

Providing your PC clock is

accurate to within a few seconds and your latitude/longitude is set in the program the satellite should be heard when the footprint is shown over your QTH. On the subject of your PC's time, another useful utility program to try is Net Time, refer Reference 8, which will keep your PC clock synchronised to one of a user selectable list of time servers which are accurate to a few milliseconds.

If you own one of the newer dual band handhelds try programming the 2 m/70 cm frequencies into the unit and it should be possible to hear the satellite when it is over your QTH. If using a rubber ducky antenna only passes directly overhead may be heard. If a small Yagi, Reference 3, or perhaps a base antenna is used more passes will be workable. Once one is hooked on satellites there are many base station antennas to construct including crossed dipoles, Lindenblads, Reference 6, and quadriflars, Reference 7.

Many amateurs successfully work AO-51 using a dual band antenna directly connected to a HH.

Do not hold the radio with the antenna vertical as you would when operating through a repeater; it is best to have the antenna orientated at right angles to the elevation angle of the satellite.

The other important consideration for the newcomer to satellites is the phenomenon called 'Doppler shift'. This is the same effect as when you hear a police siren; it sounds higher in pitch as it is coming towards you and lower in pitch when it is going away from you. When using a hand held radio just program a frequency, say 5 kHz, above and below the nominal frequency to allow for the Doppler shift. It is then a simple matter to change memories as the satellite passes above you.

If the handheld you are using has full duplex mode, that is, it simultaneously receives and transmits try using a pair of headphones or an ear piece to monitor the downlink frequency when transmitting.

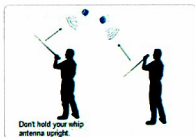


Photo 2: Antenna orientation.

Before transmitting try listening to the satellite, or perhaps record a few passes to get an idea of the way things happen and remember to use as low a power setting as needed to get a good signal through the device.

Don't be afraid to give it a go!

Some common terms used in satellite work

Azimuth - the compass direction from the viewer to the satellite.

Elevation - the angle from the horizon up to the satellite.

Footprint - the area of the earth's surface visible to the satellite.

Apogee - the point in the satellites orbit that it is farthest from the earth.

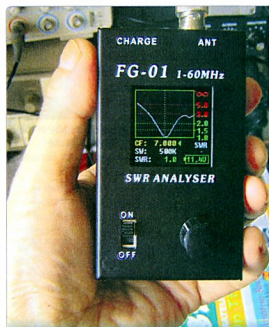
Perigee - the point in the satellites orbit that it is closest to the earth.

LEO - Low earth orbit.

Doppler Shift - the change in frequency of a received signal due to the motion of the satellite.

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Photo 1: The AHARS committee, minus Jean VK5TSX.

The AGM of AHARS was held in February. The committee was elected unopposed with two co-opted members to deal with the management of the antenna analyser kits designed by Jim VK5TR. These kits were prepared and sold through South Coast ARC until recently when they had to move premises and found they no longer had the storage space to continue.

The new committee of AHARS is David VK5KC, President, Barry VK5BW, vice President, Robert VK5ZHW, Treasurer, Jean VK5TSX, Secretary, with Committee members Denis

VK5HH, Rob VK5RG and Roy VK5NRG. The two co-opted members are Wolf VK5HWL and Tina VK5TMC.

After supper Steve VK5AIM gave a short talk about valves, with a well-mounted collection to demonstrate the similarities and differences and the historical development of valves. Many of the

valves evoked comments from some of the older members as they remembered the application to which they used the item of interest. For some of the valves there were common names that often arose because of their appearance, such as the 'light globe', the 'door knob' etc. Although few valves are used by amateurs these days they are still in use in some larger commercial transmitters and the like and they are still being produced in factories scattered around the globe.

It is important to remember that it is theoretically possible for a large enough electromagnetic pulse (such as Earth experiences when there are large active sunspots – some small ones would be welcome!) – to disrupt some solid state electronic equipment and satellites so that we could need to rely on valves again one day.

Regular meetings are now held in the Senior Citizen's Building, just behind the Blackwood Shopping Centre, on the third Thursday of each month. Visitors are always welcome.



Photo 2: Some of the valves on display at the AHARS presentation by Steve VK5AIM.

Silent Key Roy Knox Mahoney VK4BAY

It is with great sadness that I report that Roy Knox Mahoney VK4BAY, of Manly West, in Brisbane is now a silent key. Roy was born in Mundubbera in 1922, and his hand was taken from the key a few hours short of his 90th birthday.

Sixty years ago Roy was my teacher, we remained friends and in August, 1984 we joined the fraternity of amateurs. Roy was a member of the WIA and a foundation member of the Bayside Amateur Radio Society Inc. He was a strong supporter of the club, was President for a term, as well as an examiner and instructor.

He trained as a primary teacher and after a short time joined the RAAF as a wireless air gunner, and served with 459 Squadron in North Africa and the Mediterranean theatre of WW2. His plane was shot down over Crete and the crew was returned to Athens only after a daring rescue from an enemy occupied aerodrome.

Post war Roy returned to teaching, and was a dedicated teacher held in very high esteem. He was equally formidable in the playground where he coached rugby, cricket, athletics and gymnastics.

Being a competent Morse operator he soon obtained the coveted DXCC award, and participated in many competitions. Dear to his heart was the annual RD contest, which he regarded as the ANZAC Day of the air.

Roy is survived by Beth, his loving wife of 60 years, daughters Jillian, Marilyn and Robyn, and their families. His legacy will live on to all who knew him. May he rest in peace and rise in glory.

Contributed by George Roberts VK4BSH.



Jim Linton VK3PC

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They're still talking about it

The Centre Victoria RadioFest held at Kyneton Racecourse on 12 February was another success. Thank you to those who worked behind the scenes in the months leading up to the event and on the day. We appreciate the strong support shown by the commercial traders, exhibitors, second-hand sellers and all who attended.

Mini-Lecture Program

Coordinator Peter Cossins VK3BFG had his hands full gathering and organising the line-up of speakers. Comments received from those who gave presentations and from the audience made it all worthwhile. Those giving talks included a very entertaining look at home-brewing a DVB-S ATV transmitter via the DigiLite method presented by Ross Pittard VK3CE, who runs the VK3RBO ATV repeater at Bendigo and is a leader in digital television.

There was a tour, through a PowerPoint display, of the ZL6QU super-station at Quartz Hill by Brian Miller VK3MI/ZL1AZE. He showed us what was possible for the contester.

From the digital slow scan television mob was Steve Ireland VK3SIR and David Park VK3JDA who talked of the pleasure and challenges of the mode, made easier with the latest free software.

From the ACMA Field Staff, Mark Tell told a packed audience of the approach taken to interference and regulatory matters. He talked about how an attempt to extend the range of mobile telephone service at a site in south-east Victoria using amplifiers was counter-productive, which is often the case. After negotiations a new mobile cell tower was installed to greatly improve the service.

Mark also showed us phone jammers that would blank out a train carriage or with a larger model an entire area. These can silence mobile phones even when a user wants to



Photo 1: A car boot seller hard at work explaining his offering to a potential customer.

make an urgent or life threatening call for help. They are outlawed in Australia.

He mentioned some recent cases of piracy on the broadcast bands. The most famous was last October when ACMA inspectors shut down a pirate AM broadcasting station operating from Chadstone in Melbourne's south east. More recently, a further two unlicensed stations have been shut down. In early February, inspectors from the ACMA's Field Operations Section issued an individual with a warning notice for operating an FM transmitter without a licence on Queensland's Gold Coast. Later in the month, after receiving complaints from the public, ACMA Field Operations Inspectors from Melbourne visited a 27 year old man in Bendigo. Investigations revealed he had been operating an unlicensed FM broadcasting station for several months, using a 40 watt transmitter from a 20 metre tower located in his back yard. A warning notice was also issued and the broadcasting equipment was surrendered to the ACMA.

Mark told us that in order to gain an audience the illegal broadcasters resorted to social media which was one way to find out who may be responsible. Unlicensed broadcasting stations have the

potential to cause harmful interference to other licensed services. The operation or possession of an unlicensed transmitter is an offence under the Radiocommunications Act. Fines of up to \$165,000 or two years imprisonment apply.

Repeater frequency swap

The UHF repeater VK3RMM Mt Macedon has

a new frequency of 439.825 MHz while VK3RPU at Arthurs Seat is now 439.850 MHz. Both require the standard 91.5 MHz tone access. The change in frequency is necessary to overcome an on-going interference problem. The Mt Stanley VK3RNU building works should commence shortly and are expected to be completed by the middle of the year. This facility was lost in the Black Saturday bushfires.

Among other repeaters back in service are the six metre repeater VK3RMS at Olinda, thanks to an equipment upgrade. The VK3BWI broadcast service is now automated. A call-back session is held after the 10.30 am broadcast on the VK3RMM two metre repeater and the 8 pm re-broadcast service has resumed. The HF broadcasts are likely to be reinstated.

Give the warship a call

A reminder that VK3RAN will be on air on Anzac Day, 25 April, from the museum ship HMAS Castlemaine moored at Gem Pier, Williamstown. During the special effort VK3RAN will again be using amplitude modulation (AM), under the control of Terry Murphy VK3UP. He will join others on ships and other museums in the afternoon. All are welcome.



Spotlight on **SWLing**

Robin L. Harwood VK7RH

✉ vk7rh@icqmail.com

Well, winter is fast approaching and I shall be spending more time listening to shortwave. The ever-increasing gaps are becoming so noticeable now with the major players opting out broadcasting directly to Europe, the Americas, Australasia and East Asia. Fortunately there are some choosing to remain on HF, especially targeting Africa and parts of Asia, where there is poor or little access to IT available. Another trend is the disappearance of smaller domestic outlets that were formerly on shortwave, especially in Latin America and Indonesia. FM has largely replaced HF as the audience has shrunk because the only ones listening seem to be wistful DXers and not locals.

As I have previously mentioned, the BBC World Service is leaving the iconic Bush House for a new complex near Oxford Circus, which will combine all BBC news platforms into one central location. This will mean that the remaining BBC World Service will become a rolling 24/7 news format. The new central location will give the World Service access to domestic radio and television stories and vice versa, more World Service stories available for domestic consumption. On 29th February, the BBC World Service celebrated their 80th anniversary with an Open Day at Bush House. It was also presumably a good-bye to it as the 'Beeb' has been there for 71 years.

I recently received a query re an SSB feeder on approximately 5.77 MHz from a Victorian monitor.

He had stumbled across an Armed Forces' Network feeder in Guam that is for units without access to the normal satellite feeds. The actual frequency is 5.765 MHz and is on upper sideband. There are other feeders located in Key West, Florida, and Diego Garcia in the Indian Ocean. Several are within maritime allocations and are easily heard when operational. They seem to be irregular and when I have observed them, are relaying the public NPR network. I remember hearing the AFRTS on shortwave when I commenced monitoring some 52 years ago. I remember going to a house in Lime Avenue here in Launceston and a school friend, who eventually became a radio amateur, built a small receiver for 21 MHz and the AFRTS provided a very strong signal. Unfortunately they kept broadcasting descriptions of baseball games, which was extremely boring for me.

The 15th of this month will be the centenary of the sinking of the Titanic. I am aware that there will be commemorative amateur stations operating in England, Nova Scotia and the United States and details are available elsewhere. This event has some significance as radio was used to summon help to rescue the passengers and crew.

Unfortunately some ships that were close by were not monitoring the frequency and were unaware until later of the disaster. As a result, it became mandatory for a compulsory listening watch to be maintained on the common distress frequency of 500 Kcs (500 kHz) as it was then and until the 1990s when technology and automation rendered the radio officers redundant. It is a pity that no recordings were made of those fateful communications although they were written down for posterity.

Thinking of recordings has made me ponder if there is a historical archive containing important radio events that have influenced us. It would be a pity if these were lost and deleted. What about an archive of silent keys? Sadly too many I have worked over the years have passed on. Are there any available and perhaps the WIA could start an on-going archive of amateurs and perhaps historical moments in amateur radio history here in VK. I think there may be scattered collections in many locations yet there needs to be a central repository and website. These may be already there. I honestly don't know so please enlighten me. What do you think?

Well that is all for this month. Don't forget you can email me at vk7rh@wia.org.au



Special event station W6G

San Francisco Amateur Radio Club will be holding a Special Event Station - **W6G** - to celebrate the 75th Anniversary of the Golden Gate Bridge on May 26, 2012 at 2000Z to May 27, 2012 at 2200Z.

Details can be found at <http://www.sfarc.org/timeline05262712.htm>



Amateur Radio NSW will be holding its AGM on Saturday morning, 21 April 2012 at the Centenary Building, 63 Quarry Road, Dural. Paperwork is being posted to members this year. There are no planned email postings. The guest speaker will be Jeff Johnson VK4XJJ who last year walked from east to west across Australia. Jeff did this as a fund raising operation for NETS. Previously, Jeff had walked from south to north across the centre of Australia.

Easter will see the annual Urunga Convention, which has been continuous since 1949. Attendees will start gathering on Friday evening but the main days are Saturday 7th and Sunday 8th. The event is promoted as the longest running Fox Hunt field day in Australia. Indeed the weekend has continuous mobile and pedestrian fox hunts. A dinner is scheduled for Saturday night at the Bowling Club, and numbers are required. The base for activities is the regular venue, the Senior Citizens Hall in Bowra St., Urunga. The old trophies from the early days are on display at the Ocean View Hotel. Ken VK2DGT is the contact at either krgolden46@hotmail.com or telephone 02 6652 3177.

The Oxley Region ARC has their annual field day across two days of the June long weekend. This year will again be at the Tacking Point Surf Lifesaving Club Hall on Saturday 9th and Sunday 10th June. This is a quiet location, ideal for fox hunting. The club had to move their planned assessments to this month. Too many activities on each weekend last month! Contact the club via Box 712, Port Macquarie 2444 for inquiries and bookings for all licence grades. There is a lot of interest in APRS within the club, many members having acquired equipment. APRS

equipment is to be installed at both their repeater sites, VK2RPM and VK2RCN.

NSW WICEN advise that their sister squad, the Bushwalkers Wilderness Rescue Squad will be offering their Comprehensive Remote Area First Aid Course on the first and third weekends in May. The web site for WICEN is www.nsw.wicen.org.au and has the calendar of upcoming events.

HADARC plan to be active in the International Marconi Day, on 21 April. The Central Coast ARC has test transmissions on their 70 cm ATV repeater VK2RTG Monday and Tuesday at 1930 hours. It is planned to convert the present analogue transmission to digital. Waverley ARS have a Foundation weekend planned for the 12th and 13th May. Inquire at education@vk2bv.org Fishers Ghost ARC held their AGM on 29th February.

The upgrade class at ARNSW on Monday evening is underway, although additional students are welcome to join. The next Foundation Sunday will be 20 May. Assessments for all licence grades will be held on Sunday 27 May during the morning of the bi-monthly Trash & Treasure.

2012 Central Coast Field Day

Fine weather hosted in the 2012 Central Coast ARC Field Day at the Wyong Racecourse on Sunday, 26th February. Just after first light the flea market traders started setting up with the buyers hot on their heels. Perhaps in future years keeping the buyers out while the traders set up could be a benefit. This policy applies to the main trader's floor while they set up. This area opens at 9 am. This year there were fewer traders, including some of the major



A view of the Wyong 2012 Field Day activity. As always, there seems to be lots of action.

players in both locations. General attendance also appeared to be down a bit on recent years. Scanning the name tags did show a good collection of interstate visitors. A new paved car park this year was a welcome addition but the overflow cars still had to park in the grassed area. An attendance estimate was in excess of a thousand.

The WIA had a good display of books and services and was kept busy throughout the day. Exam assessors from ARNSW conducted six assessments with five successful candidates. Three technical lectures were conducted. The CCARC had arranged to have slots for groups to get together but no one took up the offer. Several groups set up and provided displays of their areas of interest.

The Central Coast ARC, their members and helpers have to be thanked for putting on another successful annual event which is often billed as the largest amateur field day in the southern hemisphere.

Other smaller field activities in VK2 will be the Urunga Convention over Easter and the Oxley Region ARC at Port Macquarie over the June long weekend.

A view from Tim VK2ZTM

Silent Key

Angus Graham Thornton VK3IY

Born in Melbourne on 18 November, 1926, Graham was raised in Warrandyte close by the Yarra River. During his childhood he developed a passion for steam trains which remained with him all his life. His children have memories of him listening to records of steam trains climbing through cuttings and saying, 'Now if you listen carefully you'll hear the sharper puff puff of the K class loco at the rear of the train', and then go into raptures over trains blowing their whistles.

While his mother Dr Mary Thornton was working in New Zealand, he spent his early school years at boarding school. He later attended Ivanhoe and Melbourne Grammar schools where his classmates included such notables as Frank Thring of later acting fame. He then went on to study at Swinburne Tech which is where they kindled his interest in electronics.

On turning eighteen, Graham enlisted in the Australian Army Signal Corps. He trained as a coast watcher and was due to be deployed, complete with radio, by parachute onto a Pacific Island to report on Japanese shipping movements; however, the end of hostilities intervened before this occurred.

After the war he courted a local Warrandyte girl Phyllis May Hussey and they were married on 13 May, 1948.

In the early 1950s, Graham became involved with the Warrandyte Fire Brigade, installing radios in the fire station and fire truck, something which is taken for granted today but was an innovation back then.

It was 1955 when Graham was appointed initial Base Manager of the Royal Flying Doctor Service (Victorian Section) in Derby, WA. When he arrived in Derby all pastoral stations were still using pedal radios. Within two years every station on the RFDS network had the latest Traeger HF radios that were state of the art at the time.

Shortly after his arrival in Derby, the RFDS Avro Anson crashed during a night time mercy flight on the return journey to Derby, killing the pilot, medical staff and the patient. Graham was convinced it was brought down by a tornado as there was a narrow strip of wind shear through the trees close to the crash site.

Graham established many life time friendships with the people of the Kimberley, among them Ann and John Thompson who, with Graham's technical support, provided 'School of the Air' for the remote outback.

Many years before cyclone 'Tracey' devastated Darwin, Koolan Island, a BHP iron ore mining site in King George Sound, was flattened by a cyclone on New Year's Eve, severing all their communications except the radio link to the base station



in Derby. New Year's Eve is not the easiest time to contact anybody, let alone convince them that you really do have an emergency requiring an immediate response.

However, Graham persisted and was able to convince a Melbourne commercial radio station to broadcast a message for the managing director of BHP to contact him in Derby, which he subsequently did and disaster relief was mobilised.

Realising after nine years that employment opportunities in the Kimberley for his children were limited, Graham moved the family back to Melbourne.

At the age of 37 he 'ran away to sea' and joined the merchant marine as a radio operator on the MV Lemana. Many of these voyages were to Hobart, a place which captured Graham's imagination and influenced his decision to later live there.

After the passing of Dr Mary in 1965, Graham came ashore and took up teaching at Blackburn High School until he decided that the only thing he enjoyed about teaching was the holidays.

He then accepted a position with the CSIRO operating one of the first Mass Spectrometers in Australia and decided that a 90 cc Honda motorcycle was the best way to commute between Warrandyte and Clayton. 'Little Red' soon gave way to 'Big Red', a Honda CB250 'real motorbike'.



Graham was a familiar sight around Warrandyte with his mutton chop whiskers protruding through his helmet and 'Snoopy on Kennele' cartoon on the back of his red and white striped 'bikie' jacket and emblazoned with the words 'C'est Le Baron Rouge'.

In 1975 Graham moved to Howrah on the eastern shore of the Derwent in Hobart. Still hearing the call of the sea, Graham purchased a fishing boat and crayfish licence, and began catching crayfish in season and tuna in the off season. He was very proud of his locally built fishing boat and often boasted that the Huon Pine it was constructed from would last a thousand years. Realising the wives onshore were concerned about the welfare of their men at sea, Graham thought they would receive some comfort if they could listen in to their husband's radio traffic, so he developed the 'Fish Widow', an SSB receiver constructed in a cake tin.

Sadly, Phyllis passed away from cancer on Graham's 59th birthday. Without Phyllis the magic of the Hobart lifestyle disappeared, and Graham eventually returned to Melbourne where he married Rosalind Anderson.

First licensed in January, 1964 as VK3AXN, Graham operated mainly CW, with 'ragchewing' interspersed with some DX contacts. In 1986, Graham's father, Angus Pollard Thornton, passed away and Graham inherited his father's call sign VK3IY and his radio equipment.

From May, 1989 until June, 1992 Graham was the Managing Editor of Amateur Radio magazine, and then continued as a proofreader until May, 1998. He also served as a proofreader of OTN magazine from September, 2007 until his death.

I only knew Graham for a little over 20 years but enjoyed our many somewhat pedantic debates and discussions over a variety of matters, mostly to do with electronic technical items or the correct use of English grammar. Many of these discussions took place when we worked together in the WIA Federal office in the late 1980s and during the 1990s, and in later years via email and in person at the biannual RAOTC luncheons.

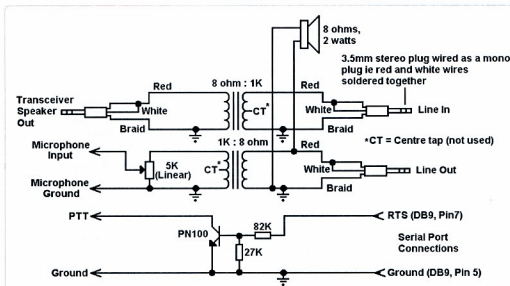
Graham did not enjoy the best of health in the last few years and passed away in his sleep on 16 January, 2012 at just over 85 years of age. Graham, with that gravelly voice and the wicked twinkle in his eye, will be sorely missed!

Much of the above information came from the eulogy delivered at Graham's funeral by his second son, Vince. Our condolences to Ros and Graham's family.

This obituary was first printed in the March, 2012 edition of OTN. It was contributed by Bill Roper VK3BR.



The 'Dibble' – A digital mode interface box, with an introduction to PSK31



The author of this article, published in the January/ February 2012 issue of AR, Ross Fraser VK2WN advises that the original Figure 4 had a couple of mistakes and that the replacement Figure 4 has corrected those errors – being the placement of a speaker in the line out circuit and the addition of an earth in the PTT section.

Figure 4: Schematic diagram of the 'Dibble'.



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AMSAT

David Giles VK5DG
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It's all a question of timing - part 2

Eight new satellites, two more in trouble and Fox-1 given a boost by NASA.

Vega

ESA's Vega launch was a success. There are now another eight satellites orbiting around the Earth. A two hour video of the launch was made by ESA and is available from the MaSat-1 website [1]. They achieved the planned elliptical orbit with an apogee of ~1450 km and perigee of ~300 km (to give the satellites a maximum of 25 years in orbit). So depending on where in the orbit you are, you can have maximum pass times of 10 to 23 minutes. So far, the number of times I have heard the afternoon passes it has been at the longer end of the range.

But not all satellites are created equal and there have been varying degrees of success. ESA has collated reports from the first few hours after launch. Looking at each in turn:

ALMASat-1 started well with telemetry decoded soon after launch. From Mike Rupprecht DK3WN's SatBlog he notes that signals deteriorated and have not been heard since the 14 February.

e-st@r has been heard. The signal was described as feeble after launch and has been confirmed by amateurs. The controllers are hoping it is just an orientation problem as there are solar panels on only five of the six sides. I haven't heard from e-st@r yet on its 437.445 MHz downlink. Reception reports will earn a QSL card. Website is at arreweb.polito.it/ricerca/E-STAR/#

Goliath has been heard and its signal was also described as feeble. It

transmits 1200 baud AFSK and CW on 437.485 MHz and a high speed downlink on 2.4 GHz when over the Romanian ground station. The CW beacon has been decoded by the controllers. At this stage I have not heard from Goliath either. Their English website is at www.goliath.ro

MaSat-1 has been the most successful so far. Its continuous CW and digital downlink have been heard on all passes I've listened. Like DO-64, MaSat-1's satellite team have released software to demodulate, decode and send telemetry back to the university in Budapest, Hungary via the Internet. It is written in Java so can be used by Windows, Linux and Mac users alike and is found at [2]. Within the first fortnight over 100,000 packets have been received by 118 amateurs worldwide.

MaSat-1's mission is to test various satellite sub-systems such as an Attitude Determination and Control System (that is, it can measure and orientate its position in space), ultra-reliable power system, and redundant on-board computer. Bill Tynan W3XO announced that the operators of MaSat-1 have applied for and been issued with an OSCAR number. It is now designated MagyarSat-OSCAR 72 (or MO-72).

PW-SAT-1 - I made a mistake in last month's article. The uplink is 435.020 MHz and the downlink is 145.900 MHz. I have managed to hear the 1200 baud BPSK downlink. This is the same type as used on AO-16, LO-19, IO-26, DO-64. I have heard the telemetry beacon but it wasn't on continuously, just the occasional short burst. It looks promising for the future transponder activation.

Robusta. The downlink frequency has been changed to 437.350 MHz from the published frequency of

437.325 MHz and ESA reported signals heard after the launch were feeble. The Robusta website doesn't have any more news. <http://www.ies.univ-montp2.fr/robusta/>

UNICubeSAT-GG is reported by ESA to have been heard but telemetry not decoded. As it sends a frame of 9600 GMSK every six minutes you may be lucky to get two chances per pass. The telemetry details have been posted at their website at <http://www.gaussteam.com>

XaTcobeo was heard by the Spanish ground station soon after launch. It has CW telemetry which is keyed 800 Hz on its FM downlink, so can be easily heard on a FM receiver at 437.365 MHz. It sends a frame of 20 WPM telemetry every 75 or 150 seconds. I have heard this one and it has a good, strong signal, claimed to be 500 mW. More details on the telemetry have been posted at www.xatcobeo.com and look under the 'Radio Amateurs' tab (in English).

NASA to help with Fox-1

On 10th February NASA announced that AMSAT-NA's Fox-1 had been selected to join thirty-two others in their third round of cubesat mission candidates. The others come from universities, Department of Defence institutions and NASA field centres around the USA. Competition will be tight as from the thirty-two satellites selected in previous rounds only eight have flown. If Fox-1 is selected for flight then NASA will cover the costs of integrating it into the launch vehicle and the launch itself. These flights are planned for the next three years and the cubesats are a secondary payload. Fox-1 will have a mode U/V FM voice transponder and is designed to keep operating while in sunlight when the batteries finally fail. It will be a test bed for the planned successor Fox-2 which will have a software defined transponder similar to ARISat-1.



AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station,

Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft. AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly net Australian National Satellite net

The net takes place on the second Tuesday of each month at 8.30 pm eastern time, that is 0930 Z or 1030 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making "skeds" and for a general "off-bird" chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater: 146.850

MHz

VK2RIS Saddleback repeater: 146.975 MHz

VK2RBT Mt Boyne Repeater on 146.675 MHz

In Queensland

VK4RIL Laidley repeater on 147.700 MHz

VK4RRC Redcliffe 146.925 MHz IRLP node

6404, EchoLink node 44666

In South Australia

VK5TRM, Loxton on 147.125 MHz

VK5RSC, Mt Terrible on 439.825 MHz IRLP

node 6278, Echolink node 399996

In Tasmania

VK7RTV Gawler 6 m. Repeater 53.775 MHz

IRLP node 6124

VK7RTV Gawler 2 m. Repeater 146.775

MHz. IRLP node 6616

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9558. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email. Frequencies and nodes can change without much notice. Details are put on the AMSAT-VK group site.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night. Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

More satellites in trouble

More late-breaking news is that two more satellites are in trouble. Compass-1's computer shut down due to low temperature and battery voltage. This has happened before and with amateur's help they were able to compensate. This time the battery is much weaker but they were able to reset it after two days of silence. Now they have to adjust for the new conditions. Currently the beacon has been set to activate every eight minutes instead of three to reduce power consumption.

Worse is the news that ever reliable VUSAT VO-52 has gone silent. All beacons and transponders have shut down. Currently it is in the hands of the Indian Space Research Organisation. Hopefully I will have good news about VO-52 next month.

Final Pass

Congratulations to ESA and the various universities on a successful launch. MaSat-1 is by some standards a simple satellite. Its function is to test basic satellite subsystems; no transponder, no

scientific experiments, no bells and whistles. But MaSat-1 and the team have done the job very well. The website is informative and kept up to date. The software gets the telemetry from receiver to the university from anywhere in the world simply and efficiently. Other organisations should take note for their cubesat projects.

References

- [1] <http://cubesat.bme.hu/en/hirekl/>
- [2] <http://cubesat.bme.hu/en/radioamatoroknek/klisenszofvert/>



Don't forget

3 - 17 May | YL International Meeting in Adelaide

YL International Meeting Starting in Adelaide and finishing in Darwin.

YL meet from around the world with their OMs. The Meet is open to YLs and their OMs. You don't have to be a member of any organization or even licensed but should be interested in amateur radio. Most participants are active on air but that is not a requirement for attendance.

Check our website www.ylinternational2012.com for more details.

G'day from sunny WA! February seems like it was a busy month for everyone over here, so without any more rambling from me, over to Bill Rose at HARG.

We had a very busy time in February. On the 20th Perth celebrated the 50th anniversary of 'The City of Light' to celebrate John Glenn's orbit of the earth in 1962 in the Mercury spacecraft 'Friendship 7'. John Glenn was the first American to orbit the earth and when he passed over Perth every citizen was encouraged to turn on their outside lights so John could see Perth from space. To celebrate the anniversary from the big screen in the Piazza in Northbridge an ARISS contact was made with the International Space Station (NA1SS) via VK5ZAI in Adelaide and AH6NM in Hawaii. HARG club member, Meg VK6LUX, was the project manager for the event through her work at the State Records Office of Western Australia, and club members Onno VK6FLAB, Alan VK6PWD and Miles VK6MAB were in the control room or on the stage along with WA ARISS representative, Martin VK6MJ, to help operate the NASA telebridge unit. Ten primary and high school students, including Don VK6PDS and Alex VK6FLOL, spoke to Captain Dan Burbank KC5ZSX, commander of the International Space Station. After the event, HARG set up a demonstration of amateur radio on the roof of the nearby car park as part of an 'Astrofest' event.

The HARG monthly general meeting on Saturday, 25th February was well attended with over 20 members and several visitors turning up to hear club member Steve Chamberlain VK6IR, the VK6 QSL Bureau Manager, give a talk on modern QSL procedures. Steve covered how to get cards printed and how to send and receive cards, either direct or via the bureau. Steve also explained the sorting process



Photo 1: The new 'G' tower.

for the cards and covered the eQSL electronic process and several logging programs.

At this meeting the Club's revised Rules of Association were voted on by members and the required 75% vote was achieved to have the new Rules adopted. Thanks to Richard VK6BMW for all his hard work over the last few years to get the Rules to this stage. Thanks also to club president Onno VK6FLAB for the final push and to the rest of the committee for reading and checking the content.

Our forthcoming 'Technical Talks' will have a space theme. We are arranging a talk by a radio astronomer and also something on the Square Kilometre Array (SKA). We may also have a visit to the club by Professor Lyn Beazley AO, the Chief Scientist of Western Australia. More details as things are finalised.

Don't forget that HARGFEST, our annual Swap Meet will be held at the club rooms in Lesmurdie at 1300 hours on Saturday, 28 April. Lots of

bargains and prizes as usual.

Thanks Bill and thanks to HARG and especially Meg VK6LUX, for your involvement in celebrating the 50th anniversary of 'The City of Light'.

NCRG has been very busy this month. The attached photos show the newest arrival at NCRG. On Saturday, 4 February at 0700 a large number of the NCRG team met at the club with one thing on their minds – to raise the 'G' tower! After several months of careful planning, it all came down to this one Saturday morning.

The crane was booked, the anticipation growing. Finally we would see this monster in the air.

The day went off without a hitch. The tower was

raised, the 40 metre beam removed from the old tower and installed onto the new tower, new heavy duty rotator installed, and the 70 cm repeater (VK6RNS) antenna moved to its new location.

This, from Wayne VK6EH: *'Well boys, job done, and well done for all who played any part in the 'G' tower project, what an achievement to be proud of. It is a pleasure to behold and one we can all be proud of; a special thanks to Gerald and Darby who played major roles in this project and many others who were involved with footings, steel work, donations and just general dog bodies, a job well done.'*

'Thanks also to the troops who toiled away in the sun cleaning up the site, Ian, Ian, Larry and Leigh all good work and a special thanks to the crane driver for an excellent price for the five hours on site; Brian I think we should buy him a carton, can you please action that please! Thanks also to Mitch VK6FLEX who along with Stuie VK6LSB carried out a lot



Photo 2: The principal antenna mover, the crane, in the operating position.

of the work aloft...scary stuff being up at 23 metres'. After lunch some of us ran the co-axial and rotator cables into the shack and terminated them ready for use, with only

Photo 3: The tower team. Bottom L to R – Gerald VK6XI, Anthony VK6AL, Ian VK6ZIC, Zeljko VK6VY, Phil VK6IP, Ian VK6TWJ, Arthur VK6CY, Andrew VK6IA (Antenna Coordinator), Greg VK6ED, Steve VK6IR, Leigh VK6WA. Top L to R – Mitch VK6FLEX, Wayne VK6EH, Larry VK6LOL.

minor adjustments needed. Thanks all for a great effort'.

Thanks Wayne. I would also like to take a moment to personally thank everyone from the club who has been involved with this project. It's a fantastic sight.

Please don't forget HARGFEST on 28 April.

Until next month, 73 from John de VK6HZ/VK6XX.

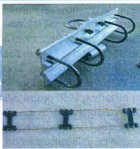


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On sporadic E VHF propagation and solving a mystery about maximum usable frequencies – Part 1

Roger Harrison VK2ZRH

The classical model of Es propagation can support maximum usable frequencies above 144 MHz, but only rarely. How, then, to explain the frequent reports, worldwide, of VHF propagation with high maximum usable frequencies (MUFs)? This paper demonstrates, for the first time, that this propagation likely occurs by means of *petit chordal hop* in a disturbed Es layer, and outlines another possible high-MUF mode – *layer trapping*.

An outline version of this article was posted on the VK Logger's *Propagation & Solar Cycle News* forum on 17 March, 2011. Without the facility of the VK Logger, the research behind it would have been much more difficult and lengthy, if not impossible. For that, we have Adam Maurer VK4CP to thank. He is the developer and maintainer of the VK Logger (www.vklogger.com).

Introduction

There has been much comment, discussion and speculation over decades on the whys and wherefores of sporadic E (Es) propagation at VHF. Given that it is an ionospheric mode, just how Es supports propagation at frequencies into the mid-VHF range and higher has puzzled amateurs and scientists alike and led to some interesting speculation on occasions.

Sporadic E contacts between amateurs on the 50 MHz band have been commonplace for many decades. With the proliferation of amateurs operating on 144 MHz in countries the world over, reporting of contacts via sporadic E has burgeoned over the last 20 years. It is almost 50 years since I first experienced Es DX on 6 m and 2 m, 40 years since I first researched ionospheric sporadic E and VHF propagation.

Sporadic E has been denoted as Es in the scientific and technical

literature for more than 70 years. Writing it with an apostrophe – E's – is unnecessary. When speaking of sporadic E, the term is pronounced "ee ess", NOT "eez". End of soap box session.

In my early career, during the 1970s, I worked in a senior technical position at the Australian IPS Radio and Space Services (IPS) for some seven years. I learned a lot about the ionosphere and ionospheric radio propagation. I learned to interpret and scale ionograms (read off the parameters). I worked in transequatorial VHF propagation research and ionosonde technology, among other things, and pursued my interest in sporadic E in my own time, with the encouragement of colleagues at IPS. I have trawled through and scaled many thousands of ionograms, recorded on 35 mm and 16 mm film in that era. When I rekindled my interest in sporadic E in recent years, all this experience came in handy.

Es propagation on 50 MHz (and 70 MHz in Europe) is generally considered to be via conventional ionospheric propagation mechanics. The simple geometry you learned about when studying for your licence exam. But many amateurs are sceptical or do not believe this could hold up at 144 MHz (or even 100 MHz in the FM broadcast band). Or if it did, such events would be extremely rare. But reports of widespread 144 MHz Es DX over decades are now so numerous as to confound that [1], while the observations of Pocock and Dyer on the 88–108 MHz FM broadcast band are legion [2]. So what is happening?

With the advent of the VK Logger for reporting VHF propagation, and the availability of IPS ionograms online [3], I have been able to scrutinise VHF propagation paths where the mid-points are located within 'view' of an ionosonde as

this enables direct modelling of the propagation geometry and its relation to ionospheric conditions. The results have been both 'as expected' and delightfully surprising!

Mid-latitude sporadic E consists of thin, dense layers of ionisation formed by wind shears in the E-region that compress long-lived metallic ions into horizontal clouds or 'patches' from less than one km to about five km thick, appearing at heights ranging generally between 90 and 130 km altitude. Patches may be only 100 m across, with clouds up to 1000s of km in extent [4, 5, 6].

Many amateurs confuse the E-region (often called the E-layer, but it is not really a layer, being 40 km thick) and sporadic E, as if the latter is an "extension" of the E-region. It is not. It is more akin to a thin, horizontal sheet of gelatin floating within a column of water. That is, a sporadic E layer is a "stranger", or "foreigner", appearing in the E-region. The ions within a sporadic E layer are long-lived metallic ions, principally iron (Fe^+) and magnesium (Mg^+), while the ions in the E-region are generally oxygen (O^+), nitrogen (N^+) and nitric oxides (NO_x^+), which dissipate at night. The electron density (electrons/ cm^3) in sporadic E generally exceeds that in the E-region by many times, and the peak Es electron density can exceed that in the F-region by many orders of magnitude.

I have found that VHF propagation by sporadic E occurs by at least two principal modes:

- conventional ionospheric reflection ("classical") by a thin, 'plane' Es layer, and
- by successive reflections via the crests of ripples or other structures in an Es layer that subsequently returns the raypath to Earth – which I call '*petit chordal hop*'.

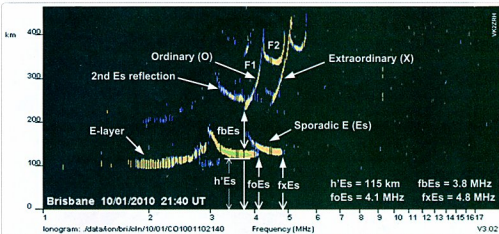


Figure 1: Vertical incidence ionogram with various key features marked. The ordinary (O) and extraordinary (X) ray reflections are clearly seen, O to the left, X to the right. The ordinary ray penetration frequency of the Es layer, $foEs$, is a measure of the peak electron density. The Es layer is 'blanketing' the F1 layer below 3.8 MHz (denoted as $fbEs$).

In each case, I can demonstrate that the well-established propagation geometry and ionospheric science can be applied to analyse and model the propagation and the maximum usable frequency for a path. Mode (b), petit chordal hop, nearly doubles the MUF for a path, yielding MUFs to at least 230 MHz with intense Es. However, there may be a third propagation mode, that I have dubbed 'layer trapping', and capable of supporting even higher MUFs, which I will discuss later.

Before going into the details of the models for these propagation modes, it is first necessary to understand something about sporadic E as seen on vertical incidence (VI) ionograms.

Es on ionograms

VI ionograms are produced by swept frequency, pulsed RF HF radars with antennas pointed straight up. The echoes returned from the various regions of the ionosphere are displayed on a graph of height versus frequency. Figure 1 is a fairly typical summer morning ionogram for Brisbane, showing the E, F1 and F2 layers and sporadic E [3]. I have marked the various features. The ordinary (O) and extraordinary (X) reflections are clearly seen, O to the left, X to the right. The 'split' reflections result from the effect of the Earth's magnetic field on RF propagation in the ionosphere. The

E, F1 and F2 echoes curve upwards to a cusp as frequency increases due to group retardation of the signal near the peak electron density. The Es traces do not curve up as the layer is very thin and the ionosonde resolution is insufficient to resolve it. Note the multiple reflections. After the first return, the others are from repeated ground-ionosphere-ground echoes.

The ordinary ray penetration frequency, or $foEs$, is important because it is a measure of the layer's peak electron density. The Es virtual height, or $h'Es$, plays a key role in determining the propagation path distances and, in conjunction with $foEs$, the MUF of the path. The extraordinary ray penetration

frequency, $fxEs$, is 0.7 MHz higher than $foEs$. The difference (called the 'split') is half the gyrofrequency (fH), the natural 'spin rate' of electrons in the ionosphere, which is 1.4 MHz at Brisbane [7]. Hence, $fxEs - foEs = 0.7$ MHz.

The ionosonde 'view'

IPS ionosonde antennas are upward pointing crossed-deltas (many ionospheric stations use these antennas). They have a half-

power beamwidth of about 90° through the mid-HF range, narrowing to about 60° above 10 MHz.

As illustrated in Figure 2, when Es is present, the antenna system "illuminates" an area with a radius equal to the height of the Es layer (also referred to as "whole sky" illumination) and the receiver will respond to returns from within the entire area covered. If $h'Es$ is 100 km, the view radius is 100 km. At the narrower beamwidth, the radius of the circle illuminated is about 58% of that for the wider beamwidth. Nevertheless, the ionosonde receiver responds to echoes across the whole area, particularly when the Es has ripples or other structures within it.

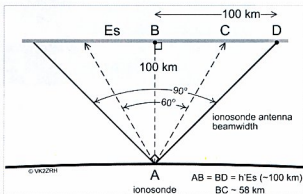


Figure 2: Vertical elevation, showing geometry of the ionosonde 'view' of a sporadic E layer (not to scale). As shown, if $h'Es$ is 100 km, the antenna system illuminates a circle of 100 km radius (BD). If $h'Es$ is 115 km, then the view radius is 115 km.

Ionograms of particular interest

Figure 3 is an ionogram showing Es typical of a flat (or 'plane'), thin, dense layer over Brisbane. Note the multiple reflections. No F-layer echoes can be seen, so the Es is said to be fully blanketing. The virtual height of the first return is 110 km, and it ceases at the 'top' penetration frequency, denoted as $f_t E_s$, which is 9.6 MHz. To determine $f_o E_s$ from an ionogram like this, $f_t E_s$ is generally assumed to be $f_x E_s$, and $f_o E_s$ is found by subtracting half the gyrofrequency. So in this instance, $f_t E_s - 0.7 \text{ MHz} = f_o E_s = 8.9 \text{ MHz}$.

Figure 4 is another ionogram, this time showing "spread" Es. The spreading of the Es traces likely arises from crinkles, ripples or other structures in the Es layer, which reflect the transmitter pulses from varying ranges at oblique angles, as well as from directly overhead, perhaps at different heights. Group retardation also contributes to the spreading. Note that the Es trace extends off-scale at 20 MHz and only partially blankets the F-layer. Spread Es is a common phenomenon.

VHF propagation via a thin, 'plane' Es layer

The geometry of a propagation path via plane Es is illustrated in Figure 5. A plane Es layer lies parallel to

the Earth's surface, not tilted across its extent or having ripples or other structures in it (no lumpy bits!).

The raypath of a signal from a transmitter at A, at an angle (ϵ) above ground, travels towards the

Es layer, is refracted towards the ground at P and received at B. The common convention refers to this as reflection. Here, (i) is the angle between the incident raypath and the vertical line through P, while (r) is

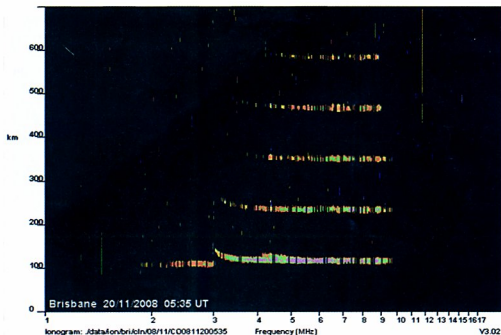


Figure 3: Ionogram showing a dense, totally reflecting plane Es layer at 110 km, having a high value for $f_t E_s$ of 9.6 MHz. Hence, $f_o E_s$ here is 8.9 MHz.

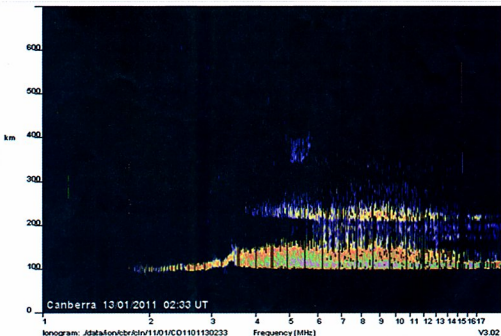


Figure 4: An example of "spread Es". The first F-layer echo is mid-image; $f_b E_s$ is 5 MHz. Lowest virtual height, $h' E_s$, is 99 km. The top frequency is above 20 MHz, so peak electron density is very high.

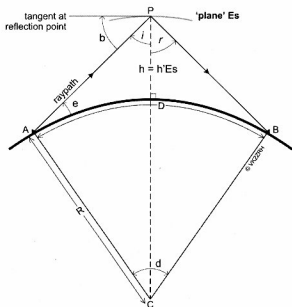


Figure 5: Geometry of propagation via plane Es (exaggerated scale). R is the radius of the Earth. D is the distance over the Earth's surface between A and B . The line from C to P is at right angles to the Earth's surface and has a length of $R + h$. Angle $(b) = 90 - (i)$.

the angle between the vertical and the emerging raypath. Angle (e) is the raypath elevation angle, while angle (b) is that between the incident raypath and a tangent to the reflection point at P , which is a horizontal line. These angles are important in determining the MUF for a path.

In *Ionospheric Radio* [8], author Davies sets out the relationships for propagation in a thin layer in a series of very useful equations.

$$f_{OP} = foEs \cdot \sec(i) \quad (1.0)$$

where f_{OP} is the usable operating frequency, and $foEs$ the measured ordinary ray vertical incidence penetration frequency at P
 $\sec(i)$ is the secant of the angle of incidence

This is the well-known "secant law" relationship, from which the "classical MUF" can be evaluated. The secant of an angle varies from 1.0 at 0° to infinity at 90° . So you can see immediately that the larger the incident angle, the greater the usable operating frequency for a given value of $foEs$. There is a maximum value for (i) , which is reached when the raypath elevation angle is tangent to the Earth, ie. angle $(e) = 0^\circ$. Triangle CAP is now a right angle triangle. Hence, $\sin(i) = CA/CP$. The length of CA is R , while CP is $R+h$, so we can find the maximum of angle (i) as follows:

$$f_{OP} = foEs \cdot \sec(i) \quad (1.1)$$

The term 'arcsin' means the angle (in degrees) for this numerical value of sine.

When (e) is 0° , this sets the maximum (theoretical) one-hop range or path distance, expressed as:

$$D_{MAX} = \sqrt{8Rh} \quad (1.2)$$

This situation also sets the maximum possible usable frequency, expressed as:

$$f_{MAX} = foEs \sqrt{1 + \frac{R}{(2h)}} \quad (1.3)$$

These three equations cover the "limiting case", where $(e) = 0^\circ$. Equation 1.3 gives us the MUF for the limiting case. Clearly, the height of the Es layer ($h'Es = h$) is important to all these relationships, so all the critical parameters of Es propagation are determined by $foEs$ and $h'Es$. For a given value of $foEs$, the maximum path distance and f_{MAX} vary directly with the Es layer height, as shown in Table 1. The mean radius of the Earth used in the calculations is 6371 km [9].

foEs	h'Es (km)	D_{MAX}	Angle (i)	f_{MAX}
9 MHz	90	2141.8	80.43	54.2
	100	2257.6	79.91	51.5
	110	2367.8	79.43	49.2
	120	2473.1	78.97	47.2
	130	2574.1	78.52	45.4

Table 1: Es propagation parameters for the limiting case, where angle $(e) = 0^\circ$. Indicative values of f_{MAX} are derived for $foEs$ of 9 MHz. Note how D_{MAX} and f_{MAX} vary with $h'Es$.

Achieving a raypath elevation of 0° is generally impractical, but many Es propagation paths occur at remarkably low angles, often in the range $1-3^\circ$. VHF antenna radiation patterns in the vertical plane may show low responses at such angles compared to the peak gain elevation angle, but the response is not zero. Remember that aircraft enhanced propagation on long paths (eg. 500+ km) occurs at angles below 1° , for example.

For path geometries other than the limiting case, that is, generally 'usual' circumstances, a little trigonometry provides the following equations for determining (i) and D :

$$(i) = \arcsin \left[\frac{R}{(R+h)} \sin(90 + e) \right] \quad (2.1)$$

$$D = \frac{2R}{57.3} \left[(90 - e) - i \right] \quad (2.2)$$

The MUF is determined by the secant law:

$$MUF = foEs \cdot \sec(i) \quad (2.3)$$

Knowing $foEs$ and $h'Es$ at a path mid-point, and thus being able to derive angle (i) , $\sec(i)$ is referred to as the "M factor" (multiplier), for obvious reasons. To make life easier in determining the MUF, it is more convenient to deal with the more familiar sine and cosine trigonometric functions, which are 'standard' functions on scientific calculators

and in printed tables of sin, cos and tan values. The secant of an angle is the inverse of its cosine, so 2.3 can be rewritten as:

$$MUF = \frac{foEs}{\cos(i)} \tag{2.4}$$

As angle (b) is the complement of (i) [that is, 90 – (i)] and sine is the complement of cosine, 2.4 can be rewritten as:

$$MUF = \frac{foEs}{\sin(b)} \tag{2.5}$$

Thus, the M factor can be evaluated from either 1/cos(i) or 1/sin(b).

$$M \text{ factor} = \frac{1}{\cos(i)} = \frac{1}{\sin(b)} \tag{2.6}$$

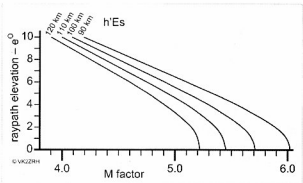


Figure 6: How the M factor varies with the raypath elevation angle and height of a plane Es layer.

The relationship between the raypath elevation angle (e) and the M factor is non-linear, with a different curve for different Es layer heights, as illustrated in Figure 6. Es layers at the lower heights yield a higher M factor and thus higher MUFs. A lower raypath elevation angle, with

longer paths, rapidly improves the M factor, but angles below 2° experience a flattening of the M factor increase in all cases.

Table 2 illustrates the MUFs achievable for a variety of ionospheric and path parameters. The range of h'Es values here are commonly observed on ionograms (e.g. Figures 3 and 4) and the path lengths are generally typical, at least in the Australasian-South Pacific region. A column listing foEs values for a 98 MHz MUF, in the middle of the FM broadcast band is included as this band is widely used as a propagation indicator. For Es propagation at 144.5 MHz, note that foEs needs to be above 24 MHz for elevation angles up to 4° or 6°. I have personally observed such values of foEs on ionograms when 'sondes swept 1-30 MHz (1950s-70s era). Indeed, I have seen ionograms with off-scale Es (at 30 MHz) from that era. However, while memorable, they were not common. Instances of off-scale Es (at 20 MHz) on present era ionograms are readily found among the online displays of the IPS network stations [3].

Figure 7 sums up the case for the geometry of VHF propagation via plane Es. As Es is very thin compared to its altitude, the trigonometry is much simpler than that employed for F-layer propagation and parallels optical reflection from a mirror.

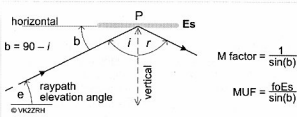


Figure 7: Close up of the geometry for propagation via plane Es.

h'Es	(e)	(f)	D (km)	M factor	MUF for foEs of 9 MHz 20 MHz		foEs for MUF ³ (MHz) 50.5 98.0 144.5		
90 km	1	80.37	1919.1	5.98	53.82	119.6	8.5	16.4	24.2
	2	80.22	1730.1	5.89	53.01	117.8	8.6	16.7	24.6
	4	79.63	1416.5	5.56	50.04	111.1	9.1	17.7	26.0
	6	78.72	1174.1	5.11	45.99	102.2	9.9	19.2	28.3
	8	77.55	989.6	4.64	41.76	92.8	10.9	21.2	>30
100 km	1	79.87	2030.3	5.69	51.21	113.8	8.9	17.3	25.4
	2	79.72	1841.3	5.6	50.4	112	9.1	17.5	25.8
	4	79.16	1521	5.32	47.88	106.4	9.5	18.5	27.2
	6	78.28	1271.9	4.92	44.28	98.4	10.3	20.0	29.4
	8	77.15	1078.5	4.5	40.5	90	11.3	21.8	>30
110 km	1	79.38	2139.2	5.42	48.78	108.4	9.4	18.1	26.7
	2	79.24	1948	5.36	48.24	107.20	9.5	18.3	27.0
	4	78.71	1621.1	5.11	45.99	102.2	9.9	19.2	28.3
	6	77.86	1365.4	4.76	42.84	95.2	10.7	20.6	>30
	8	76.77	1163	4.37	39.33	87.4	11.6	22.5	>30

Table 2: MUFs achievable via plane Es for common path geometry parameters and two indicative values of foEs, plus foEs values required for propagation on 6 m, the FM BC band and 2 m. Note how relatively small changes in h'Es and path elevation angle (e) affects the MUF.

A case study of plane Es VHF propagation

Figure 8 shows a path between VK4 and VK7 where the path mid-point passes within the view of the Canberra ionosonde at Es heights. The mid-point, and likely point of reflection, is marked PoR. Scott VK4CZ frequently spots this 50.057 MHz beacon on the VK Logger with RST reports ranging from 419 through 599. Figure 9 is the ionogram nearest to the time of one such spot – 2304 UTC on 2/01/2009. Here, fE_s is 10.2 MHz. As fH is 1.6 MHz at Canberra [7], f_oE_s would be $10.2 - 0.8 = 9.4$ MHz. As the path length is known, the elevation angle (e) is calculated to be 2.6° , and angle (i) to be 79.98° . Hence, angle (b) is 10.02° . Thus, $MUF = 9.4/\sin(b) = 9.4/0.17399 = 54.026$ MHz. We can be confident that it was Es within the Canberra 'sonde's view that supported the propagation on this occasion as the VK7RAE signal raypath to the north of the PoR passes below the Es layer at the latitude of the Sydney 'sonde' by at least 15 km. A raypath from VK7RAE slightly lower than 2.6° would be reflected from the Es layer in the Sydney 'sonde's view, but make landfall some 100 km north of VK4CZ (in the sea!).

End Part 1.

This article will be concluded in an upcoming issue.

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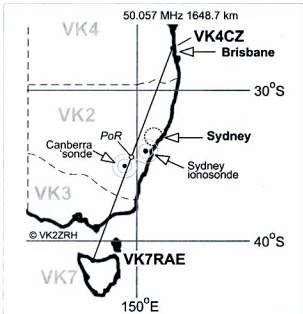


Figure 8: The path between the VK7RAE 50.057 MHz beacon at Devonport and VK4CZ on the north side of Brisbane. The circles around the two ionosonde locations show each ionosonde's view at Es heights; they don't quite overlap.

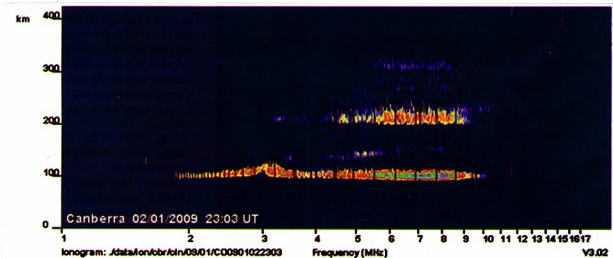


Figure 9: Ionogram for the VK7RAE (beacon) spot by VK4CZ on 2304 UTC 2/01/2009. The beacon runs 20 W to crossed dipoles [10]. RST was 549. $h'Es$ is 92 km. fE_s is 10.2 MHz. An echo from another Es cloud at a large oblique angle (44°) is evident. Path length is 1648.7 km.



DX-News & Views

John Bazley VK4OQ

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The following announcement by Chris and Steve is understandable in the current financial climate, but it does, once again, highlight the very high costs involved of mounting such an operation. The good news is that it has been 'put on hold'. 'Chris VK3FY and Steve VK6IR advise the DX community that the planned 2013 trip to Heard Island (VK0/M) has been put on hold until further notice'. The decision is due in part to the current global financial situation, plus the extremely high estimated financial cost of around US\$500,000. Both are still interested and have a number of helpful hints, however at this time the financial risks are far too great.

As a matter of interest, the HK0NA operation will break the DXpedition record set by VP6DX of 183,686 QSOs. That is the record for DXpeditions that you cannot fly into and where the operation does not take place at a hotel with all the comforts of food, water and power

supplied. It is commonly called the 'tent and generator' DXpedition record. 'We should break it by a comfortable margin. Considering the rarity of Malpelo on the DXCC 'most wanted' list at #12 and the extreme difficulties of the basically vertical terrain, we can be very proud of our accomplishment. We give full credit to our Colombian marine friends and the crew of the **Seawolf** for doing most of the heavy lifting', noted Bob K4UEE.

A team from Malaysia, Japan and England are heading to Layang-Layang (Swallow Reefs), the Malaysian claimed island in the **Sprattly Islands** chain, where there is a 90 room three star resort. Team members include 7K4QOK, JK1FNL, G3TXF, JE1CKA, JP1TRJ, 9M2/JE1SCJ, 9M8YY, JQ2GYU, JA1LZR, 9M2PX, 9M2CLN and 9M2TO. The dates are April 10th to 24th. They have a website at <http://9m0l.legendchew.com>. Not all the details have been released at the time of

writing. The call will be 9M0L and QSLs go direct to (9M2TO) 9M0L Team Penang, Box 125, GPO 10710, Penang Island, Malaysia or via the Malaysian Amateur Radio Transmitter's Society QSL bureau.

Trevor VK0TH, who is currently on **Macquarie Island**, has been away from the main base for a while. He has been working on the island since September, 2011 and now only has four more weeks left before going home. He plans to 'post a schedule and frequencies for those wanting to get VK0/M in the log before his operations cease' on his QRZ.com page.

There are no amateur radio operators expected to be on the 'incoming team' and Trevor believes it could be at least May 2013, and possibly longer, before Macquarie activates again.

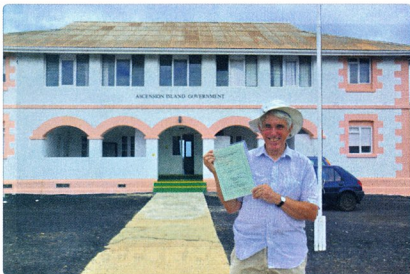
The 'Italian DXpedition Team' of I2YSB, IK2CIO, IK2CKR, IK2DIA and IK2HKT will be QRV from **Mali** as TZ5T from April 12th to 27th. Current plans include three Elecraft K3 transceivers and three KPA500 amps as well as one FT-857D. Activity will be on 1.8 through 50 MHz on CW, SSB and RTTY. On the low bands they will be using verticals. They will have two Spiderbeams and a five element Yagi for the high bands and a three element cubical quad on 50 MHz. Suggested frequencies are as follows:

CW - 1823, 3505, 7005, 10106, 14025, 18075, 21025, 24895, 28025 and 50105 kHz

SSB - 3780, 7056/7180, 14195, 18145, 21295, 24945, 28495 and 50105 kHz

RTTY - 7041, 10142, 14080, 18103, 21080, 24915 and 28080 kHz.

Art IK7JWY will be the TZ5T team's pilot station and can be contacted at ik7jwy@gmail.com.



One of the world's leading DXers, Nigel G3TXF shown collecting his ZD8XF licence at Government House in Georgetown, Ascension Island. He was able to operate only for 24 hours. Photo courtesy of Nigel G3TXF/ZD8XF.

They have a web site at <http://www.i2ysb.com> which will include a log search and QORS. QSL via I2YSB direct only or IK2CIO via the bureau.

Commencing on April 29th the following will be active from **Chihijima**, IOTA AS-031, Ogasawara Islands, JD1YBT, JD1BLC and JI1LET/JD1. Activity will be on 1.8 through 50 MHz on CW, SSB and RTTY, until May 5th. Equipment includes an FT-2000, TS-870 and FT-920 running 50-200 watts. They will be using a long wire for 160 and 80 metres, a dipole on 40 and 30 metres, a two element HB9CV on 20, 17, 15, 12 and 10 metres and a four element HB9CV on six Meters. QSL JD1YBT and JD1BLC via JP1IOF and JI1LET/JD1 via JI1LET.

Alan VK4WR and Graeme VK4FI will be active from **E51** from the 8th of April to the 27th. Callsigns are E51BKM for Alan and E51GMH for Graeme. They will be active from **Rarotonga** and **Aitutaki**. Their main band of interest will be six metres and HF on 40, 20, 17, 15 and 10 metres. Rigs will be an IC-706 and FT-450, and no amplifiers. Antennas will be a five element beam for six metres and an OCF dipole for HF. Modes are CW and SSB. QSL to VK4FI, via QRZ.com, with US\$2 postage.

Vlad UA4WHX is now QRT from **Timor Leste** where he was active as 4W0VB from the main island of Timor (OC-148) between 11th January and 8th February, with a brief activity as 4W0VB/p from Atauro Island (OC-232). All of the QSOs have now been uploaded to LoTW. QSL instructions for paper cards can be found at www.qrz.com/db/4W0VB

Cyprien 9Q1KS reports that Sergiy UV5EVJ is operating legitimately with the Amateur Radio Association of **Democratic Republic of Congo** (ARAC) club call 9Q0HQ. Sergiy is operating from the extreme eastern DRC in Lubumbashi as 9Q0HQ/7. Length of stay is unknown as of press time. QSL via UV5EVJ.

A DXpedition from **Macau** is scheduled for May. Nine members of the 'A DX Group' (ADXG) will be active from Coloane Island (AS-075, grid OL62SC) between May 17th

and 23rd. Operators will be Ruben EA5BZ, team leader, Jose EA1ACP, Jose EB5BBM, Pasqua, EA5CEE, Fernando EA5FX, Biel EA6DD, Francisco EA7FTR, David EB7DX and Adrian F5VLY. Activity will be on 160-6 metres, including the 30/17/12 metre bands, using CW, SSB and RTTY, with at least three stations on the air at the same time on different bands and modes.

Suggested frequencies are: CW - 1823, 3523, 7023, 10103, 14023, 18073, 21023, 24893 and 28023 kHz; SSB - 1825, 3780, 7065/7160, 14145, 18145, 21295, 24945 and 28495 kHz; RTTY - 7035, 10140, 14080, 18100, 21080, 24921 and 28080 kHz, and for six metres CW on 50103 and SSB on 50115 kHz.

A survey is available on their web page for the most wanted bands/modes. The group's callsign will not be announced until the beginning of their DXpedition. QSL is via EB7DX, either direct or by the Spanish bureau. All QSO's will be confirmed via LoTW. For more details and updates, visit the ADXG web page at <http://www.adxg.org/xx9>

W2GJ/KH0 will be QRV from Saipan, **Northern Mariana Islands** (OC-086) from April 29th to May 3rd. Activity will be on 3.5 through 28 MHz, and possibly 50 MHz too, on all modes. QSL via W2GJ.

W6DXO will be operating from St. John Island, **US Virgin Island** as KP2W6DXO from April 18th to 23rd. He will be on all bands. QSL via KF6JOQ.

Recently it was reported that only licensed staff of the Olonkin base will get a licence for JX. Starting in March, Svein LA9JKA is going to work on **Jan Mayen** for one year and plans to become active as JX9JKA. QSL only via his home call. From VK/ZL this is a difficult one to catch. His preference will be SSB and data modes.

The upcoming July 26th to August 1st **Sable Island** DXpedition now has a website. For those readers requiring more information on this operation, it is <http://www.cy9m.com/>

Stephane F5UOW plans to be QRV from **Reunion Island** from March 24th to April 14th. He will be

operating as FR/F5UOW during that time period, but also with special call TO2R from March 26th to April 9th. During his free time he will be on 7 through 28 MHz on CW only. QSL via F5UOW either direct or via the REF QSL bureau.

Finally DXCC News: The **Republic of South Sudan**, which joined the United Nations (UN) on July 14 at 1400Z, as the 193rd member has been assigned the callsign prefix block Z8A through Z8Z. The ARRL added country number 341 to the ARRL DXCC list and the first and only DXpedition to South Sudan was that of STOR during late July and early August of last year. The following South Sudan information can be used for those with logging software.

DXCC Entity: Republic of South Sudan; Current Prefix: Z8; CQ Zone: 34; ITU Zone: 48; Start Date: July 14, 2011; QSL Bureau: No; UTC Offset: 3 hours ahead of UTC; Continent: Africa; Longitude: 31 37' East; Latitude: 4 51' North.

Malyi Vysotskij Island (MVI), R1M, was deleted from the DXCC list as of February 17, 2012, and added to the Deleted Entities List.

Administratively at ARRL HQ, they will not make the necessary changes to the DXCC system until after the final data processing for 2011 is complete - this includes the tables shown in LoTW.

DXCC members will see their current entity totals drop by one on their Mixed awards, and on the bands and modes where MVI credit is given. They will also see their DXCC Challenge totals drop commensurately.

Good DXing until next month.

Special thanks to the authors of *The Daily DX* (W3UR), 425 DX News (1JQJ) and QRZ.DX for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of *The Daily DX* from www.dailydx.com/trial.htm





VHF/UHF - An Expanding World

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Weak Signal

After the great start to January, February has been very quiet on the propagation front.

On February 15th at 2153Z, Phil VK5AKK worked Joe VK7JG over a path of 1020 km. Reports were 5x2. On the 18th, Adrian VK4OX had more success with his SSB contacts via meteor scatter. At 2150Z, he worked Jim VK3II and, minutes later, Norm VK3DUT during long burns. On the evening of the 21st, Phil VK5AKK worked Bob VK6BE in Albany at 5x6. The following evening, Brian VK5BC worked Bob at 5x5.

Mini VK7 DXpedition

In mid-February, David VK3QM and Ken VK3AKK travelled around northern Tasmania activating grid locators, to the benefit of a number of VK3 stations. They had all bands from 50MHz to 24 GHz. On Saturday February 18th they travelled across the northwest activating QE38, 28 and 29. On Sunday, it was over to the northeast and QE49 and 39. In the following week, they headed south and met up with Rex VK7MO to work him from three squares on 10 GHz and 24 GHz (see below). Then the following Saturday (February 25th), they carted their equipment up Mt Poimena in QE47 and worked back into the Geelong area. On Sunday, they rested!

Barry VK3BJM reports on his efforts to work them:

As it happened, I was away from home most of Saturday, and by the time I got into the shack David and Ken were in the process of winding up operations from QE29ub. I would have been amongst the very last to work them on 144.180 MHz, and whilst I didn't need the grid locator on two metres, I called at 0629Z to confirm how well they were hearing me. VK3AKK/7 was

certainly a good signal (57) to my QTH, which is hardly coastal, being 95 km NW of Melbourne and technically on the northern side of the Great Divide. I was more than happy with the 53 I received from Ken, as this was with my station running sans SSPA - about 500 mW, perhaps a little less. The path is 426 km.

Sunday morning I was in the shack early, but with David and Ken relocating to the NE corner of VK7, it was a whole different ball game. Both their sites, in QE49af and QE39xf, were at 142 and 143 degrees azimuth - basically straight through Mount Macedon, 22 km from my QTH. (I should also note that it is very tall...) The paths were a little longer (503 and 499 km respectively) and conditions a bit flatter than Saturday. And to help matters, I had a little power line noise at S1-S2 to contend with, particularly later in the afternoon. I did, at least (and with thanks to our esteemed columnist for assistance in this repair), have my 400 W SSPA back online after a little issue with a vanishing bias line.

From QE49af, Ken was worked at 51, for a 55 in return, at 0035Z. He was just audible on 432.180 MHz, but I let that band slip for others to work him as I already had QE49 on 70 cm. However, I did not have that locator on 23 cm so, once that coastal dogpiles had subsided, keyers were run from both ends of the path. The keyers were heard from both ends, but only just. A couple of voice calls were made as well, but again whilst audible they were not readable. Not quite enough lift, and too much Mount Macedon.

Needless to say 2.4 GHz was not attempted!

I then patiently lay in wait as they shifted to Petal Point, QE39ef. This locator was of particular interest, as I did not have it on 2, 70, 23, 13, anywhere... But as soon as Ken and David started operating, I knew I was

both behind Mount Macedon and up a creek. Again, I listened, attempted peaking the array and adjusted noise reduction to try and combat the power line noise that had appeared during the afternoon, whilst the Melbourne/Geelong stations exchanged 54 and similar reports with Ken. At my QTH, Ken was mostly 31 under S2 noise. (Noise would occasionally pause long enough to determine Ken was simply 31.) Eventually there was a break and I called; Ken gave me a 52, and I sent my 31 report to him. QSB struck as he was sending his receipt confirmation, and I asked him to repeat himself. It was while waiting for the signal to rise back up again that someone, presumably in Melbourne (I didn't recognise the voice and no call sign was given), came up at a sparkling 57 and said 'Ken's got your report, Barry'.

At that point I chose to ignore what threatened to invalidate the only contact into what was, out of all those locators being activated by David and Ken, the only new locator for me, and kept listening for Ken. Fortunately, Ken's signal did come up just enough to hear the confirmation straight from the horse's mouth. Conditions had dropped to the point that nothing was being heard on 70 and 23 cm (I didn't even bother glancing at 13 cm!) so at that point I went clear.

But... to whoever that was who piped up during this contact, please, DON'T! You could have only made a bigger faux pas if you'd passed on Ken's RS report to me! You may have thought you were helping, but you were not; the RS and confirmation of receipt of RS has to take place directly between the two stations, not via a third party. You very nearly UNmade my day.

My thanks to David and Ken for such a massive (and well planned) DXpedition. Terrific stuff - just a shame that the propagation was rather ordinary.

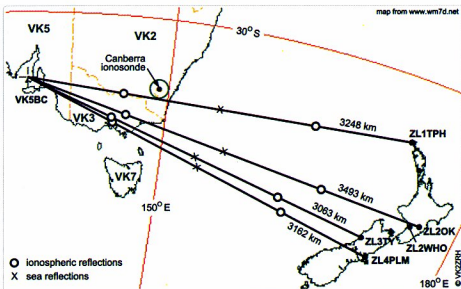


Figure 1: Geographic view of the VK5BC to ZL contacts.

First VK7 state record on 24 GHz

During David VK3QM and Ken VK3AKK's visit to Tasmania, the opportunity was taken to check out Rex VK7MO's newly completed 24 GHz system with QSOs firstly across his lounge room, then down the drive, six km across the river, 17 km from Mt Wellington to Coningham and finally 161 km from Mt Wellington to Mt Barrow with signals 5-1 and 5-6. A 199 km test from Mt Wellington to Mt Poimena showed no evidence of signals while 10 GHz signals were present at up to 5/7 with very heavy QSB. Rex now has three grid squares on 24 GHz and also three new grid squares on 10 GHz.

Analysis of two metre Es Opening, 3 January, 2012

Roger VK2ZRH has done a detailed analysis of the more spectacular contacts in early January. He reports:

As reported in last month's column, two metre propagation put on a spectacular show on this day over more than five hours, from about 2300 UTC through 0340 UTC. It seems a new VK-ZL two metre record may have been established with a contact between Brian VK5BC/p at Corny Point (PF85MC) and David ZL2OK in Takapau (RE89EX), a distance of about 3493 km; 5x8 reports sent both ways. Brian worked all ZL call areas, starting at 2300 UTC (2 January) with

ZL1TPH at RF65IN. This was followed just after 0100 UTC with ZL2WHO (RE79TP) and ZL2OK in quick succession. Then, just after 0200 UTC, he worked ZL4PM (RE66DL) and ZL3TY (RE57OM).

As all four paths exceed 3000 km, the propagation was clearly double-hop Es. Or maybe more! A propagation analysis of the longest path, VK5BC/p to ZL2OK, revealed that it was most likely mixed 2-hop and 3-hop! Figure 1 shows the four paths, the 2-hop ionospheric reflection points and the sea reflections. The map is an azimuth-equidistance projection, centred on VK5BC, thus showing great circle paths.

The IPS ionosonde at Canberra is relatively close to the likely ionospheric reflection points at the western end of the paths. As Es clouds drift in a westerly to north westerly direction at speeds ranging from about 70 m/s to 120 m/s in this region, the ionograms relating to the reflection points grouped over Victoria are earlier than the times of the contacts. The geographic spread of contacts indicated an extensive Es cloud (or cloud cluster). Such an extensive Es cloud drifting generally west at 75 m/s will pass the meridian of the Canberra 'sonde and take another 55 minutes to pass the meridian through the westerly reflection point on the VK5BC-ZL2OK path. The contact occurred at about

0107 UTC. The ionogram for 0013 UTC (54 minutes earlier) shows an intense, spread Es trace at 94 km, with a top frequency (fEs) of 13.5 MHz. The ionospheric 'split' at Canberra is 0.8 MHz, so the penetration frequency, foEs, is 12.7 MHz. As the contact was confirmed, it can be safely assumed that similar or better conditions prevailed further east along the path, over the Tasman Sea.

The Es layer at the time was 'crinkled' or 'rippled', providing the conditions for petit chordal hop, which dramatically raises the MUF [1, 2]. With foEs at 12.7 MHz, the electron density of the rippled Es layer was sufficient

to support propagation with an MUF of about 145.7 MHz on this occasion. As the raypath elevation angles calculated for the VK5BC-ZL2OK path fall within the range that petit chordal hop will support [1, 2], I investigated whether 2-hop or 3-hop propagation supported the VK5BC-ZL2OK contact.

For 2-hop propagation on this path with Es at 94 km, the raypath elevation angle is 2.1°. As it happens, VK5BC was using stacked 5-element Yagis at about seven metres height. The vertical radiation pattern would have the primary lobe at 3° elevation, and the next lobe at about 7.5°. At 2.1°, the gain is only about 1dB down. ZL2OK has a 16-element Yagi, with the primary lobe at 2.0° elevation, and the next lobe at 6.2°. The primary lobes of the antennas at each end are clearly well-matched to the 2-hop raypath elevation angle. However, the 3-hop raypath elevation angle turns out to be 6.5°, which is accommodated quite well by ZL2OK's Yagi, while the response of VK5BC's 5/5 array is about 5dB down. It's entirely possible that both 2-hop and 3-hop modes carried the signals. Figure 2 sets out the general geometry. Discussion on path loss is a subject for a GippsTech conference sometime!

From my viewpoint, the other notable contact of the day was spotted at 0340 UTC, between ZL4DK and VK3DUT, with a 5x2 report.

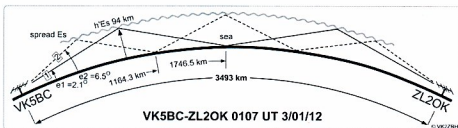


Figure 2: Propagation path analysis of the VK5BC-ZL2OK contact. Path 1 is 2-hop, path 2 is 3-hop; it's likely that both supported the contact.

Path distance is 2068.3 km which, at first glance, looks like 'classic' single-hop Es. An analysis of the propagation revealed that that's unlikely, and the most likely mode is 2-hop. Figure 3 lays out the path parameters.

The Canberra ionograms showed intense, very spread, Es at a height of 99 km having fEs values above 15 MHz for over two hours (0458 to 0718 UTC), thus giving a strong indication of the passage of the Es cloud, or cloud cluster and the extent of Es over the Tasman during the opening.

For 1-hop Es at a height of 99 km, the ZL4DK-VK3DUT raypath elevation angle would be 0.8° ! VK3DUT was using his 4x13-ele Yagi array (13 m high), while ZL4DK was using a 6-ele Yagi (about 8 m high). The primary lobe of VK3DUT's array is at about 2° elevation, but the response at 0.8° would be about

9-10 dB down. ZL4DK's antenna primary lobe is at about 3° elevation and the response at 0.8° would be about 15 dB down. Not encouraging.

However, the raypath elevation angle for 2-hop Es propagation is 8.4° , which affords a better match to each of the antennas' elevation radiation patterns. In ZL4DK's case, the second lobe response at 8.4° elevation is only about 0.5 dB down from the primary lobe. In VK3DUT's case, the raypath elevation angle falls on the third lobe of the elevation pattern, again about 15 dB down, that is, the antenna has pretty much the same gain at 0.8° and 8.4° . The stronger signal would have been from the 2-hop path. Given the 5x2 signal report, the 1-hop signal would have been well below the 2-hop signal strength.

The path MUF for 1-hop propagation ZL4DK-VK3DUT works

out to be around 207 MHz, while for 2-hop propagation, the MUF is about 156 MHz [1,2]. These values were calculated from the 0503 UTC ionogram, with an fEs of 19 MHz (foEs of 18.2 MHz), which is indicative of the Es in the vicinity of the reflection point closest to VK3DUT an hour and twenty minutes before the 0340 UTC contact, taking the Es cloud to have drifted westward at about 75 m/s. Sporadic E always has surprises in store!

Thanks to Brian VK5BC, Norm VK3DUT and David ZL4DK for help in providing information for these analyses, and Adam VK4CP/VK4GHZ for the VKLogger, a wonderful resource.

- [1] "On Sporadic E, VHF Propagation, MUFs and Petit Chordal Hop", Roger Harrison VK2ZRH, DUBUS 2/2011.
- [2] "A New Model of VHF Sporadic E Propagation", Roger Harrison VK2ZRH, at www.vklogger.com/forum/viewtopic.php?f=43&t=9832

Summer VHF/UHF Field Day

John Martin VK3KM, also known as the WIA VHF/UHF Contest Manager, reports that a total of 91 logs have been received from 82 entrants:

VK1 AI DA FD KW MT DSH

VK2 CU EI GG LE MB NR TG ACL
AMS BOZ DAG HRX JDS WFD XDE
ZQX

VK3 BQ HY KQ LY MY QI VL AKK
ALB AVV AZR BJM EGC JTM NFI
TCX TOM TPR UHF VFO WRE WWW
YFL YVG ZHQ

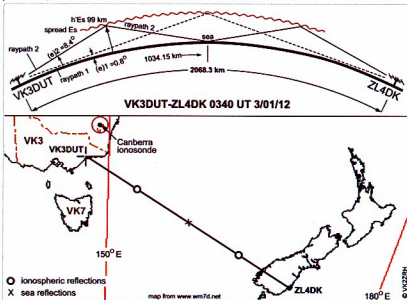
VK4 IZ NE OE ADC GHZ HBG JAM
KLC VDX WIE WIS ZDP

VK5 AR KC KK KX LD NE NI NY OQ
SR TE TX ZD ZT AIM AKM ALX ARC
KLV KPR VAB ZQV FPAW

Well done to all who participated. Results are included elsewhere in this issue.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au

Figure 3: Path parameters for the ZL4DK-VK3DUT contact; the 2-hop path prevailed, it seems.





Digital DX Modes

Rex Moncur
VK7MO

144 MHz FSK tests to North Queensland

Kevin VK4UH provided the following report:

Throughout January and February this year, a number of meteor scatter operators from southern VK4 have been turning their beams to the north in an attempt to 'stir up' some interest and activity from the north of the state. It was clear from emails received that a number of stations around the Rockhampton and Cairns areas had tried Meteor Scatter in the past without success - out of range probably from the majority of VK2 and VK3 operators while most of the VK4s from the SE of Queensland were probably beaming away from them.

A series of activity sessions, with SE VK4s beaming north, has been running on Saturday and Sunday mornings from 2100Z after the normal activity periods. Operation has been on 144.330, the secondary MS frequency to avoid any conflict with stations continuing after the nominal end of the normal sessions. Unusually of course with the southerly VK4s transmitting in the FSK441 'First Period'. Stations participating from the south included Kevin VK4UH, David VK4KSY, Robert VK4LHD, Phil VK4CDI and John VK4MJF.

A number of operators, all new to MS and FSK441, including Frank VK4FLR at Zilzie QG56JR, Ulf VK4TUL at Trinity Beach QH23UF and Chris VK4FFR at Townsville expressed interest in participating in the activity sessions. On 25 February Frank successfully decoded pings from VK4LHD and VK4UH. Just under 500 km distance. The contacts were not completed as no return signals were returned in that session. It is easy to forget how complex WSJT can seem without some 'On the Spot' guidance with screen settings and protocol etc.

As the author recalls, before hearing my first ping I couldn't believe it was possible. After that ping I couldn't leave it alone!

The activity sessions will continue as long as interest continues and all operators, new and old, at either end of the state are invited to participate. Kevin VK4UH is happy to receive emails for any advice or guidance required by operators new to the mode - vk4uh@wia.org.au

24 GHz aircraft scatter

During December David VK3HZ and Rex VK7MO undertook tests of aircraft scatter on 24 GHz from David's home QTH in Melbourne to about 20 km northwest of Albury over a 220 km path. The path crosses the Melbourne-Sydney aircraft route. An issue with 24 GHz is absorption loss, due mainly to water vapour. It was thought that as the majority of the aircraft scatter path is high in the atmosphere where losses are significantly lower, aircraft scatter may still be possible. Tests were only one way as Rex only had his receiver operational but by using a single tone we did see weak aircraft scatter signals at around -28 dB on the JT65c scale with larger aircraft such as 747s. To get some idea of the absorption losses on an aircraft scatter path a spread sheet has been developed that uses radiosonde data that is available on the Web. This spread sheet is available at: www.vk3hz.net/microwave/Aircraft_Absorption_Loss_by_VK7MO.xls

For the day of the tests, the total absorption losses were around 11dB as shown by example as set up on the web site. While this is early days and both Rex and David are still getting their 24 GHz systems sorted out, the results are sufficient to show that aircraft scatter is a possibility on 24 GHz.

24 GHz tests across Bass Strait

Following the 24 GHz SSB tests reported in the Weak Signal section, Rex VK7MO and David VK3HZ undertook a test over a 421 km path across Bass Strait on 24 GHz using JT65c. VK7MO was located at Mt Barrow at 1300 metres and VK3HZ at John's Hill lookout at 400 metres. The tests were undertaken on 24 February 2012 at a time when

the Hepburn chart indicated the possibility of ducting. While a QSO was not completed, signals were evident for an 11 minute period in over two hours of testing and decades were exchanged both ways. A detailed report on these tests is available on the following website: www.vk3hz.net/microwave/24GHz_Tests_1.pdf

Included on the website with that report are spread sheets used to analyse the tests as follows.

Absorption Loss Calculator by VK7MO: www.vk3hz.net/microwave/Absorption_Loss_Calculator_by_VK7MO.xls

Refractive Gradient Plotter by VK3OE: http://www.vk3hz.net/microwave/Refractive_Gradient_Plotter_by_VK3OE.xls

The main conclusions of the tests are:

- It seems likely that the 24 GHz propagation was via high level tropo-ducting at around 3200 metres.
- Comparisons between 10 GHz and 24 GHz together with calculations of absorption loss support the fact that a high level duct was involved.
- Calculations of absorption loss are consistent with the 40 dB weaker signals at 24 GHz compared to 10 GHz.
- The ducting signals are stable in frequency and constrained within a few Hz and thus JT65c is useful for tropo-ducting at 24 GHz.
- It seems that for planning purposes it will be necessary to use high ducts to avoid excessive absorption and that it will be preferable also to have elevated TX and RX locations to reduce absorption losses.
- While a QSO was not completed in this case (due mainly to minor stuff-ups at both ends) there is evidence that such a path is possible given that this was our first attempt and we have both been operational on 24 GHz for only a few days.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au



The Magic Band – 6 m DX

Brian Cleland
VK5BC

After an exciting January, conditions slowed down in February with one good opening into southern USA from VK4 early in the month. Towards the end of February some afternoon and evening TEP started to appear particularly in northern areas of VK.

Scott VK4CZ in Brisbane reports on the USA opening on 8th February. *Who would have ever thought that we could be working trans-Pacific F2 paths on six metres with a SFI that was fast receding back to levels of below 100! But Wednesday 8 February proved us wrong.*

The day didn't show much promise. Early monitoring of the usual propagation indicators had shown short Es paths between VK and ZL north island, but little else.

However at around 0130Z Remi FK8CP was being reported by stations in W4 and W5, and ever hopeful (but with low expectations) that the path would extend the additional 1,500 km to us I started tuning the frequencies which some of the Ws were supposedly CQing on. At 0149Z N5DG [EH20ab] was first heard on 50.105 CW @ RST419 with significant QSB.

By 0151Z I completed with N5DG on 50.105 CW and QSYed to 50.098 to CQ. At 020Z worked K5RK [EL29rh] RST519 who subsequently worked VK4WM. I QSYed to 50.096 to again commence CQing and at 0213Z worked K4RX [EM70ue] RST519. Soon after I received a report that AC4TO [EM70xl] was hearing me and for the next 15 minutes we tried, occasionally hearing bits of each other, but failed to complete!

Wayne VK4WTN in Hervey Bay also had a good morning on 8th February completing contacts with K5RK 529, N5DG 529, W3UUM 529, K5MV 319, K4RX 419 and ZK2C 519.

On 15th February John VK4FNC in Charters Towers reports working Fred KH7Y 0640z SSB 59 and Remi FK8CP 0914Z CW 559.

The 23rd February was an interesting day with VK4s working into T1 early in the morning and then early evening a good Es opening from VK5 and VK3 to ZL1, 2 and 3 as well as opening from VK5 to VK2 and 4. Mark VK8MS and John VK8JM in Darwin worked BA4SI and JA's later in the evening with VK3DXD also completing with BA4SI and JA's CW.

On 25th February a good mid-afternoon opening to southern VK4 with George VK4AMG and Tim VK4TIM working several JAs and Scott VK4CZ completing some RTTY contacts. The opening extended into northern NSW, where VK2FZR had a great time working 28 x JA stations. At the same time Leigh VK2KRR near Wagga Wagga and Brian VK5BC were running WSPR and being decoded by JAs. Meanwhile Wade VK4WM also worked some JAs in CW along with HL2NF and DS1QMV in southern Korea. The opening then moved across to VK6 where many contacts to JA were completed; VK6APH worked 34 JAs in 45 minutes and Peter VK6KXW on 50.090 MHz RTTY worked 38 x JA stations plus DS1QMV. KG6DX was also reported from VK4.

Peter VK6RZ summarized the opening as follows; *Good opening to JA yesterday Saturday 25/2. Heard JR2HCB calling CQ on 110 SSB at 0635Z, worked him then QSYd down to 50.102 and put out a short CQ on CW - instant pile up! Worked my way through 40 QSOs all JA until 0745Z when band dropped out.*

It's been a fairly quiet summer here on six or maybe I have been too busy elsewhere. Anyway it sure is nice to get an opening like that. It does not happen very often in VK6 (unless you happen to be north!)

By the end of February there were TEP openings to JA etc. most nights from northern VK, Darwin and NW VK6 in particular. On the evening of the 26th it did extend to VK5 with Brian VK5BC working Hide JR6EXN 5/5 SSB.

Good Es openings from VK5 to VK6 on the 12th and 15th of February with steady solid signals. Brian VK5BC worked VK6's KDX, OX, RO, GL, KXW and AB during the opening on the 15th.

Alan VK4WR and Graeme VK4FI advise they will be active on six metres from both Rarotonga and Aitutaki, Southern Cook Islands from the 8th to 27th of April with the call signs of E51BKM for Alan and E51GMH for Graeme. They will be using an IC-706 and FT-450 for rigs running 100 watts into a five element Yagi and operating both SSB and CW. They will also be active on the HF bands of 40, 20, 17, 15 and 10 metres. QSL to VK4FI, info on QRZ, and US\$2 postage required.

A message from Mike ZS2FM who advises that in previous sunspot cycle peaks the MUF usually peaks during the first week or so of April, and VK signals used to appear around 0700 UTC, in the morning at his QTH in South Africa.

Since equinox time is coming up he plans to turn the ZS2X FSK beacon in the VK direction from 1st March until end of April, 2012. The mark frequency is 50.0079 MHz and spaced -250 Hz. It runs 25 watts into a two element horizontal Yagi that will overlook the sea. During this period ZSs in the Port Elizabeth area will also be monitoring the Bunbury beacon on 50,306 MHz and Mike will also check the Wagga Wagga TV on 46.240 MHz to see if the MUF reaches that height. If by the end of March there have been traces of band openings skeds could be arranged for the first two weeks of April.

Please send any six metre information to Brian VK5BC at briancleland@bigpond.com

WICEN Tasmania (South) assists Tasmania Fire Service

A multi-agency (Fire, Parks and Forestry) Incident Management Team (IMT) was set up to manage the fires burning in the Derwent Valley of southern Tasmania between 25th February and 4th March 2012.

The larger of the two fires involved over 5,000 hectares of vineyard, grass and forest land, starting near the Meadowbank Dam power station. A number of small population centres were under threat over several days. The smaller fire, involving around 395 hectares of grassland and light bush near Ouse, was fast moving on Sunday 26th February.

WICEN is a registered resource and was called, on day one of the fire, to assist by providing radio operators for the IMT established at the Tasmania Fire Service training centre at Cambridge near Hobart airport.

Fourteen amateurs provided 34 shifts over the nine days of the fire. Shifts varied in length from three to

Photo 2: The author Roger VK7ARN – note the formal ID swing tag hanging around his neck – a wonderful advertisement for amateur radio's disaster support role.



Photo 1: Nicole Sweeney VK7FNJS, one of a number of provisional amateurs on the IMT, on the job at the Tasmania Fire Service training centre at Cambridge, near Hobart airport.

thirteen hours. Teams of, usually, two worked each shift, though there were some shifts with one and three operators. The radio room was remote from the operations room so a message form 'runner' between the two was desirable.

Of the thirteen operators, eight had completed the course PUAOPE002 – Operate Communications Systems and Equipment. This course was run by the Tasmania Fire Service for WICEN and tailored to the role,

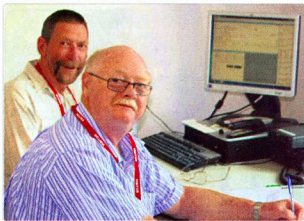
circumstances and the prior learning of the participants. A similar module is included in the WIA Emergency Communications Officer course.

Those involved, in order of shifts worked, were VK7s Peter Henry TPE, Roger Nichols ARN (WIA ECO), Scott Evans HSE, Stu Braunholz NXX, Michael Sweeney FMRS, Gavin O'Shea HGO, Chris Webb FCDW, Cedric Lockley CL, Nicola Sweeney FNJS, Damien Almond VAO, Garry Duenca JGD, Reg Emmett KK, Justin Giles-Clark TW, Warren Nicholas FEET.

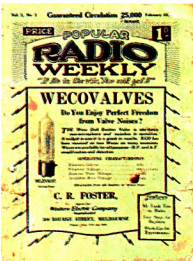
This was the fourth WICEN

activation for a major Tasmanian bushfires, the others being Broadmarsh in 2003, Kellevie in 2006 and Wayatinah in 2010.

Photo 3: Peter VK7TPE and Chris VK7FCDW.



Hamads



WANTED - NATIONAL

Copies of Radio Weekly magazine. The WIA Archive is seeking copies of Radio Weekly for copying and/or adding to the WIA Archive's shelves. Little is known about this magazine. The WIA holds two copies only. Volume 1, Number 1 and Volume 2, Number 2. They contain about 36 pages and issues included articles of general radio interest in addition to the odd experimental article.

The magazine was published in Melbourne commencing in February 1925 and claimed a circulation of 25000! For those who have responded to previous requests for copies of early magazines, thank you. We are gradually building up our collection of important Australian magazines which will be available to future researchers. Please contact Peter VK3RV via email vk3rv@wia.org.au or c/o the National Office in Bayswater if you can help us locate copies of this magazine.

FOR SALE - VIC

Nally tower, 13.7 metre wind up, tilt over, with in-ground mast column, top bearing, rotator and extension tube. Drawings and engineers computations are available. It is uninstalled and ready for transport, \$2000. Contact Ian VK3XID, on 03 9734 1507, or vk3xid@wia.org.au

WANTED - NSW

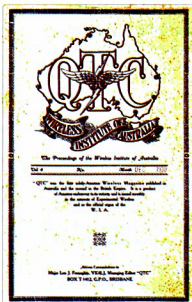
Looking for a lightweight headset, with a boom microphone, to suit a FT-817, FT-857 or FT-897 transceiver. Contact David VK2EZO, QTHR, 4 Blackwood Way, Albion Park Rail, NSW 2527.

FOR SALE - QLD

Four (4) meters, two watt meters, 2k and 200 watts, one current meter (Ip, Ep, Ig). These are brand new, never been used and were meant for the Dentron linear. All have 200 microamp movements. They are reasonably priced and would be very good for a linear project. Contact VK4DV at vk4dv@yahoo.com. au or by phone at night, on 07 4928 5537 QTHR.

FOR SALE - SA

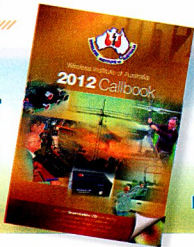
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Early copies of QTC magazine.

The WIA Archive is seeking early copies of QTC magazine for copying and/or adding to the WIA Archive's shelves. QTC was published in Queensland and claimed to be the first solely Amateur Wireless magazine in Australia and second in the British Empire! The format was duplicated foolscap pages stapled, with a light blue/grey front cover. QTC was published in the late 1920s/early 1930s, ceasing in November 1931; VK4LG was the dedicated editor. There was a later version in Queensland. We are presently interested in the early editions only. Please contact Peter VK3RV via email vk3rv@wia.org.au or c/o the National Office in Bayswater if you can help us locate this important part of our history.



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WIA Annual Conference



Mildura 25th - 27th May 2012

Weekend Highlights

Project Horus



The Project Horus group have become famous amongst amateur circles for their weather balloon launches with payloads capturing data at altitudes in excess of 35,000 m. Tracked by GPS and radio communications - once the balloon has burst, the payload descends to Earth and is retrieved. Hear about their exciting Horus launches and be part of history in the making when on Sunday morning Horus 88 will be launched. Join in the chase to be the first to recover the payload to win a brand new Yaesu FT-1900R 2 m mobile transceiver.

AMSAT and Jan King




Jan King W3GEY was a co-founder of the Radio Amateur Satellite Corporation (AMSAT) in Washington, DC, also serving on the AMSAT Board of Directors. He was project manager for a series of 12 small satellites. Jan brings to the technical symposium a wealth of experience and stories about some of our most popular satellites.

Councillor Max Thorburn



Max Thorburn is an experienced journalist and radio announcer who now operates two narrowcast AM stations, manages the local community radio, and also runs an "on line" newspaper. Max will be our guest speaker at the Saturday night WIA annual dinner.

Paddleboat Mundoo



The Paddleboat Mundoo is of steel hull construction, 34.9 metres long, with modern conveniences, kitchen and dining facilities to cater for up to 180 passengers, in one comfortable area featuring attractive quality timber ceilings and bar facilities. Enjoy lunch and the WIA Annual Conference special event station on board during the 4 hour cruise.

Technical Symposium

Amateur Radio technology to the future. Hear what the experts have to say, learn about the cutting edge technology and what our Australian Amateurs have been working on, and the bright future for our hobby.



Andrew Martin VK3OE

Andrew is a qualified Telecommunications Engineer. Andrew has developed a remote internet controlled site and chirp radar for amateur use. Andrew will discuss his remote site together with recent developments and results obtained with the chirp radar.



Peter Cossins VK3BFG

Peter is a digital ATV guru, having been involved with the ATV repeater VK3RTV since 1977. Peter will be presenting a brand new very affordable DVBS system which is claimed to put digital ATV transmission within the reach of just about anyone. A detailed look at this new DVBS system will be the main feature of Peter's ATV presentation.



Terry Baum VK5VZI

Terry Baum, 23 years of age, was first licensed in 2010 and is the principal lead for the Project Horus team. Terry works in Adelaide as a freelance IT consultant and recently presented the work of the Project Horus team to the Linux conference in Ballarat.



Jan King W3GEY

Jan is a world recognized expert on satellite design and space communications. Jan's initial involvement with AMSAT started with Oscar 5 in the late sixties.

The Program

Friday 25th May	2 - 5 pm	Registration at the Mildura Grand Hotel
	6:00 pm	Dinner at the Settlers Club
	8:30 pm	Guest speaker Alan Cameron
Saturday 26th May	8 - 9 am	Registration at the Mildura Grand Hotel
	9:00 am	WIA AGM & Open Forum
	1:00 pm	Lunch at the Mildura Grand Hotel
	2:00 pm	Technical Symposium
	6:00 pm	Pre dinner drinks in the Club Lounge
	7:00 pm	Annual dinner in the Mildura Grand Ballroom
Sunday 27th May	8:30 pm	Guest speaker Max Thorburn
	8:00 am	Project Horus balloon launch
	11:30 am	Paddleboat Mundoo & Lunch
	5:30 pm	Evening BBQ at Fergus Park

Further Information

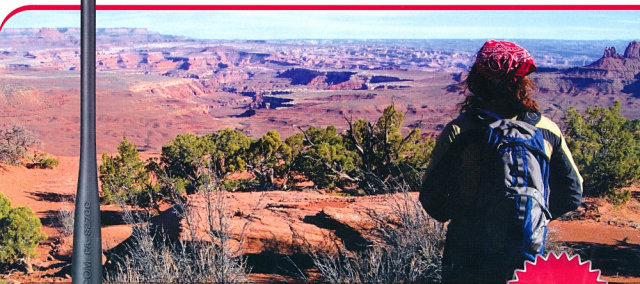
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- 1252 Memory Channels (500 Regular, 700 D-STAR Repeater Memories, 50 Scan Edges, 2 Call Channels)
- CS-31 Cloning Software Included (Update available from Icom Inc. website)
- D-STAR DV Mode and Analogue FM Mode
- Directional Keypad and Quick Menu Button
- Large Dot-Matrix Display

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